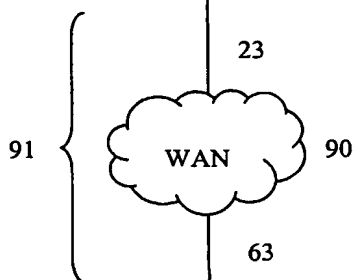
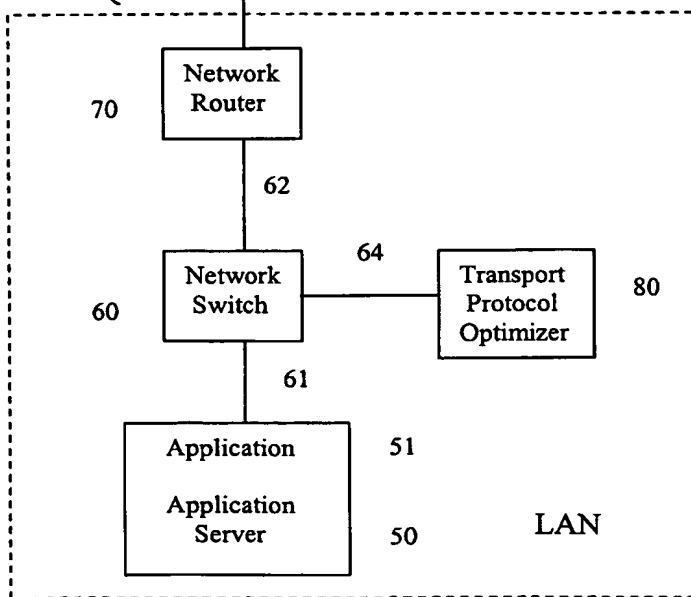


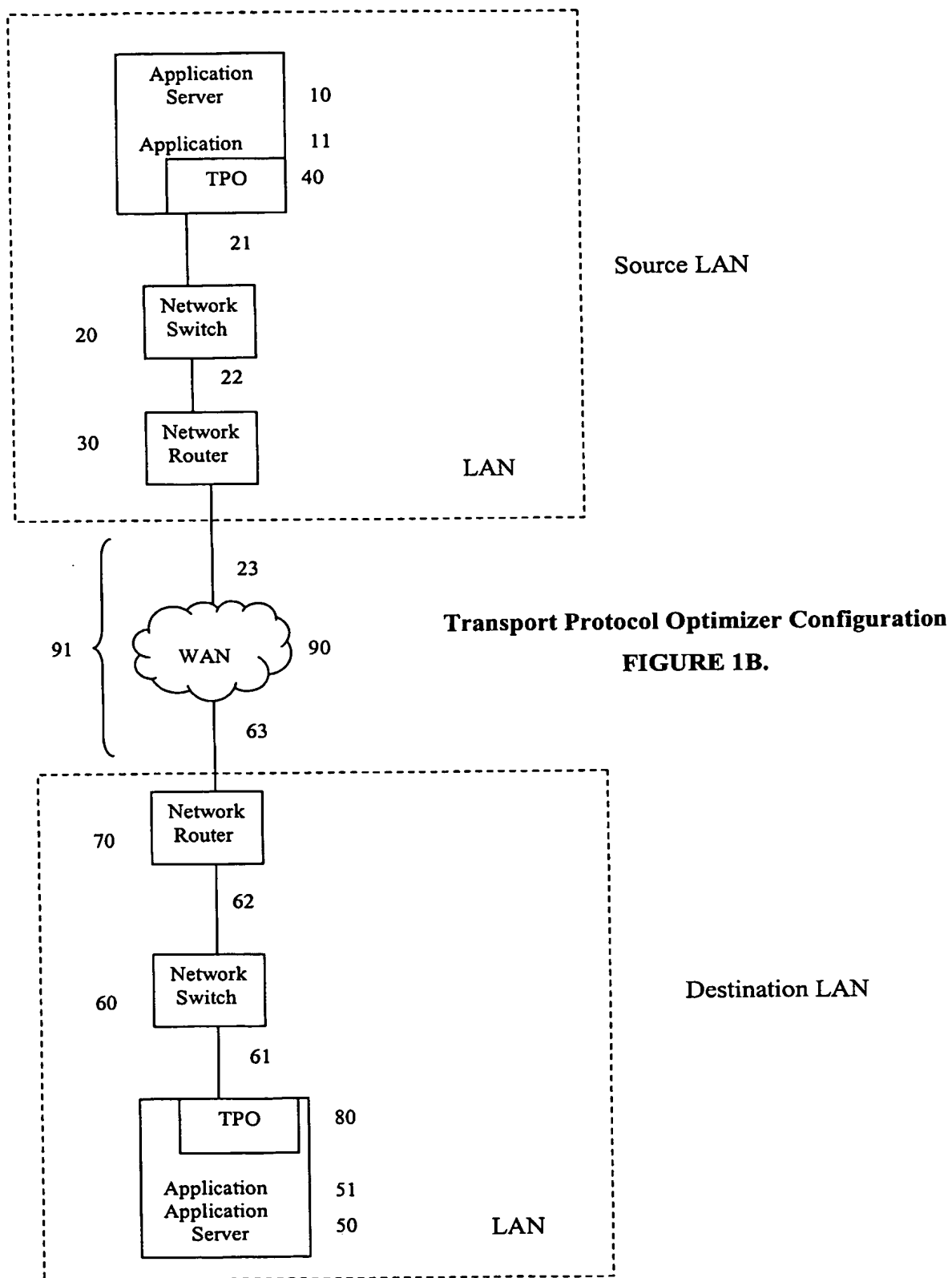
Source LAN

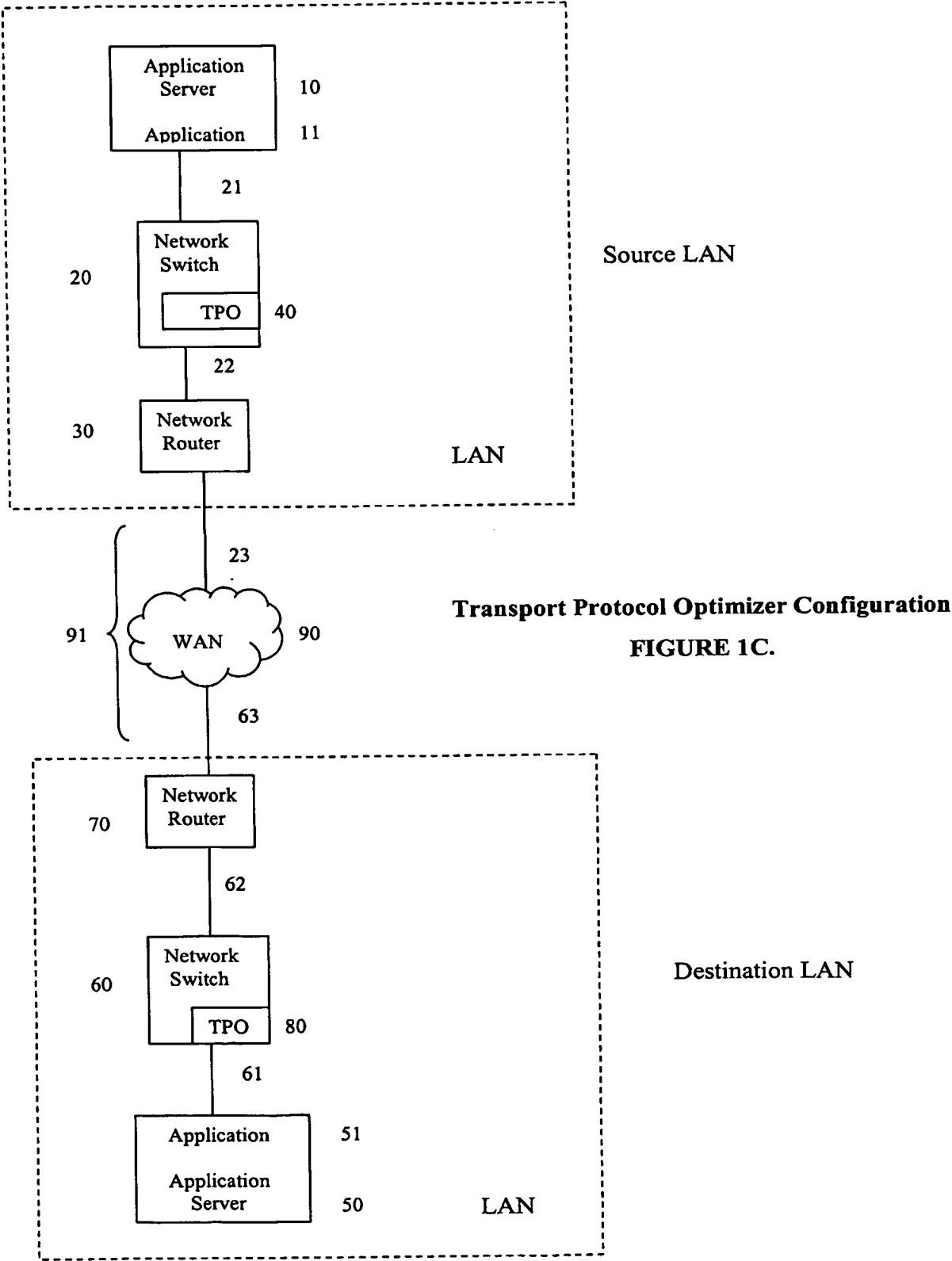


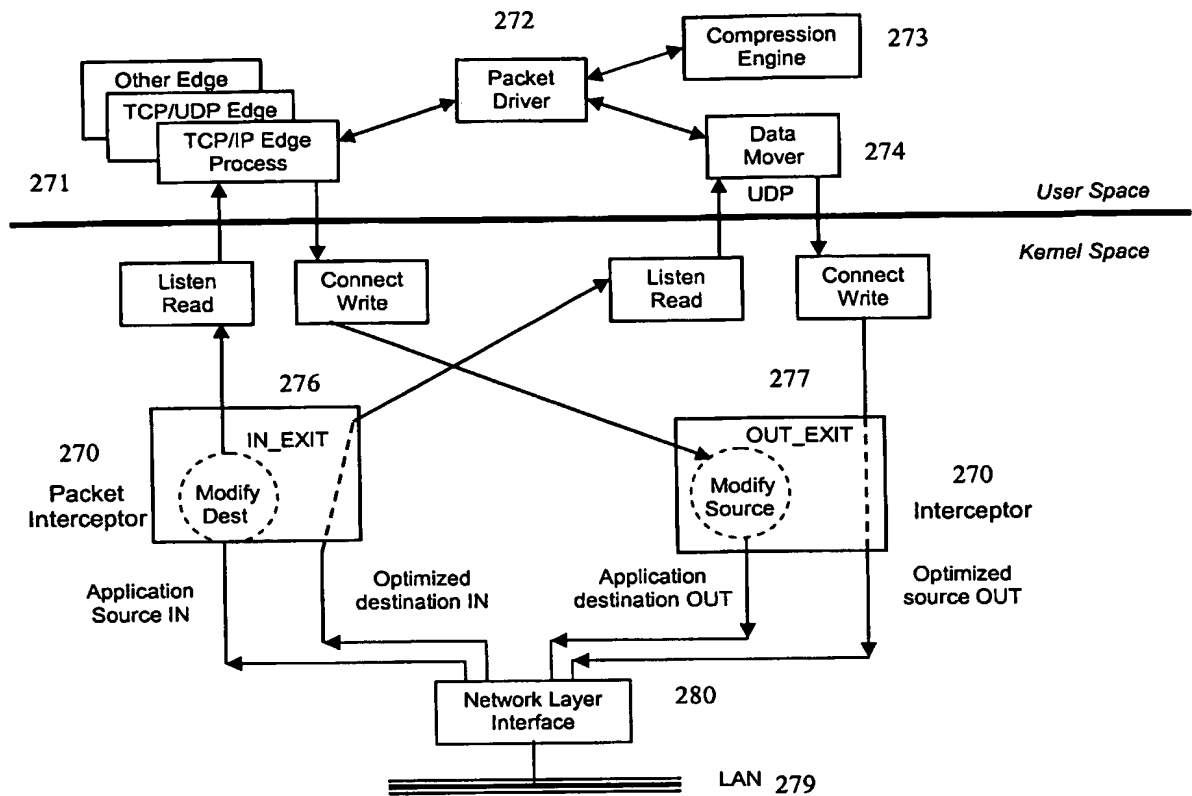
**Transport Protocol Optimizer Configuration
FIGURE 1A.**

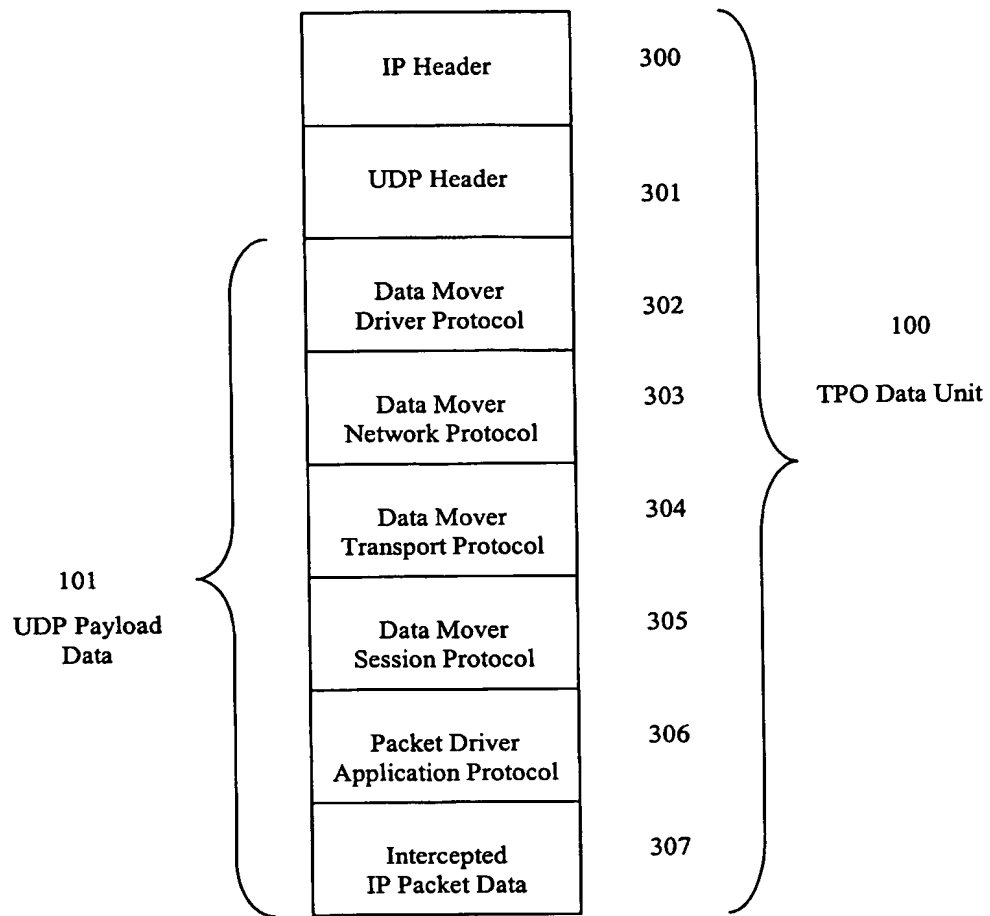


Destination LAN



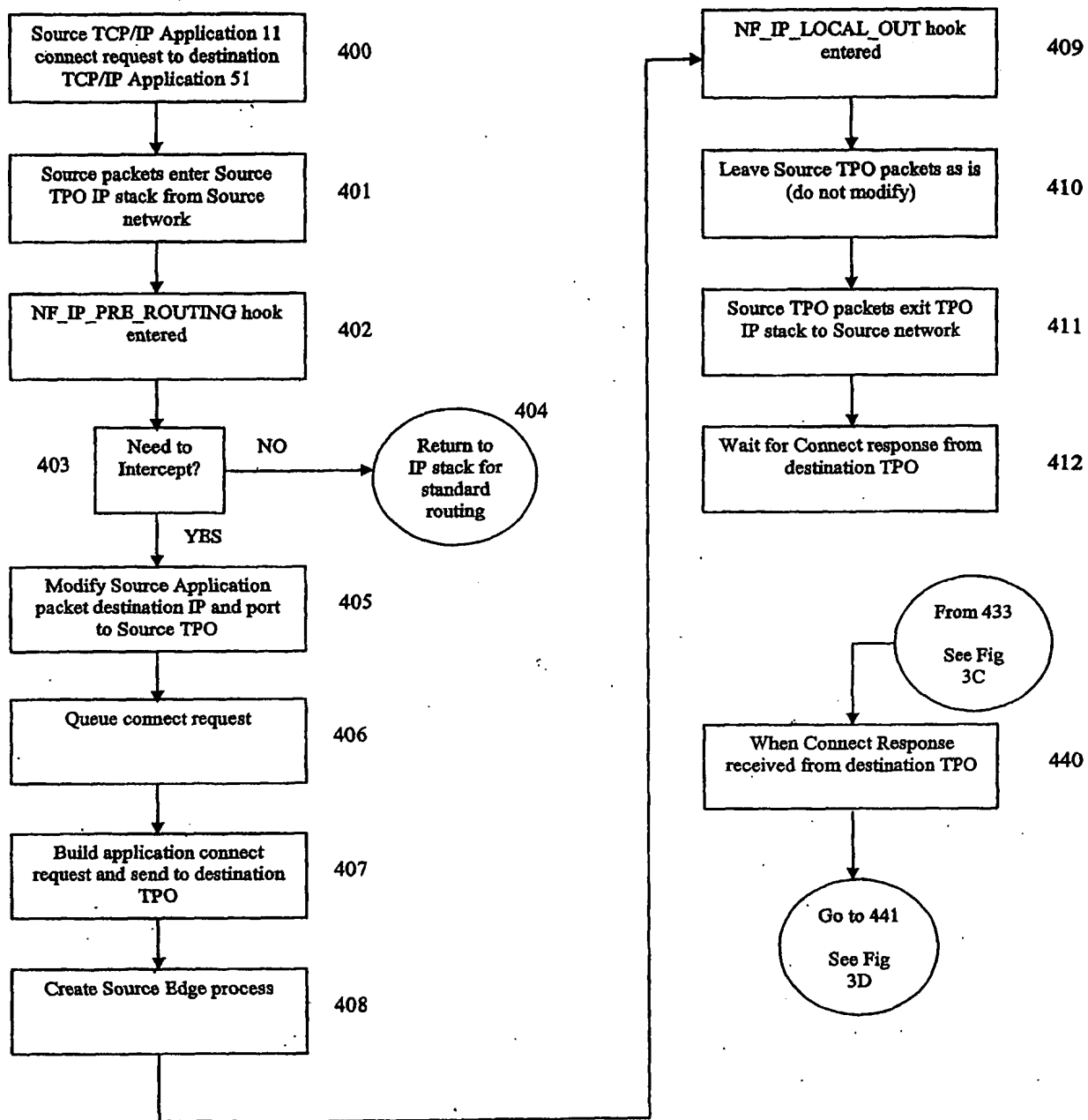


**Transport Protocol Optimizer Configuration****FIGURE 1D.**

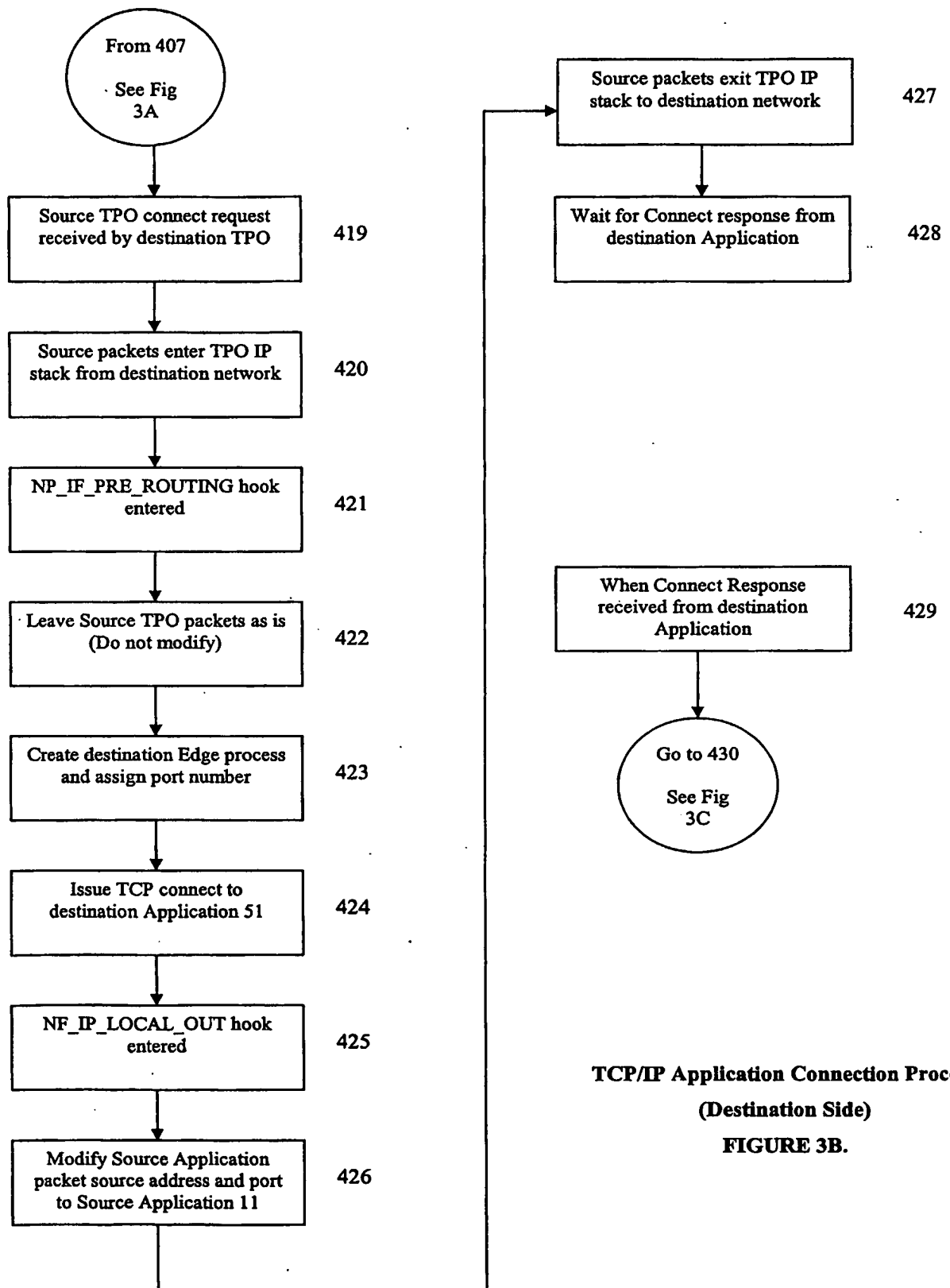


Transport Protocol Optimizer Data Unit

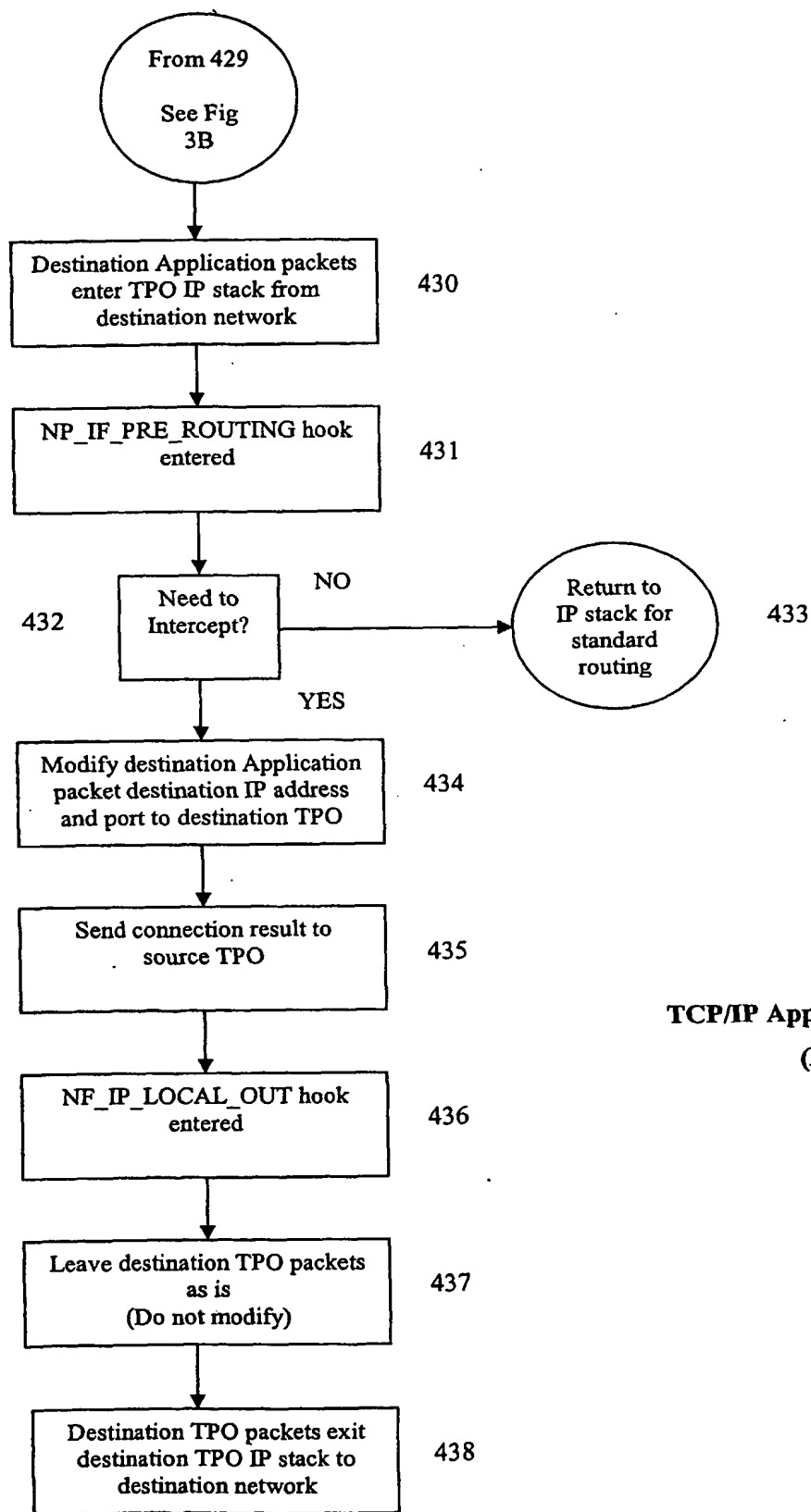
FIGURE 2.



**TCP/IP Application Connection Process
(Source Side)
FIGURE 3A.**

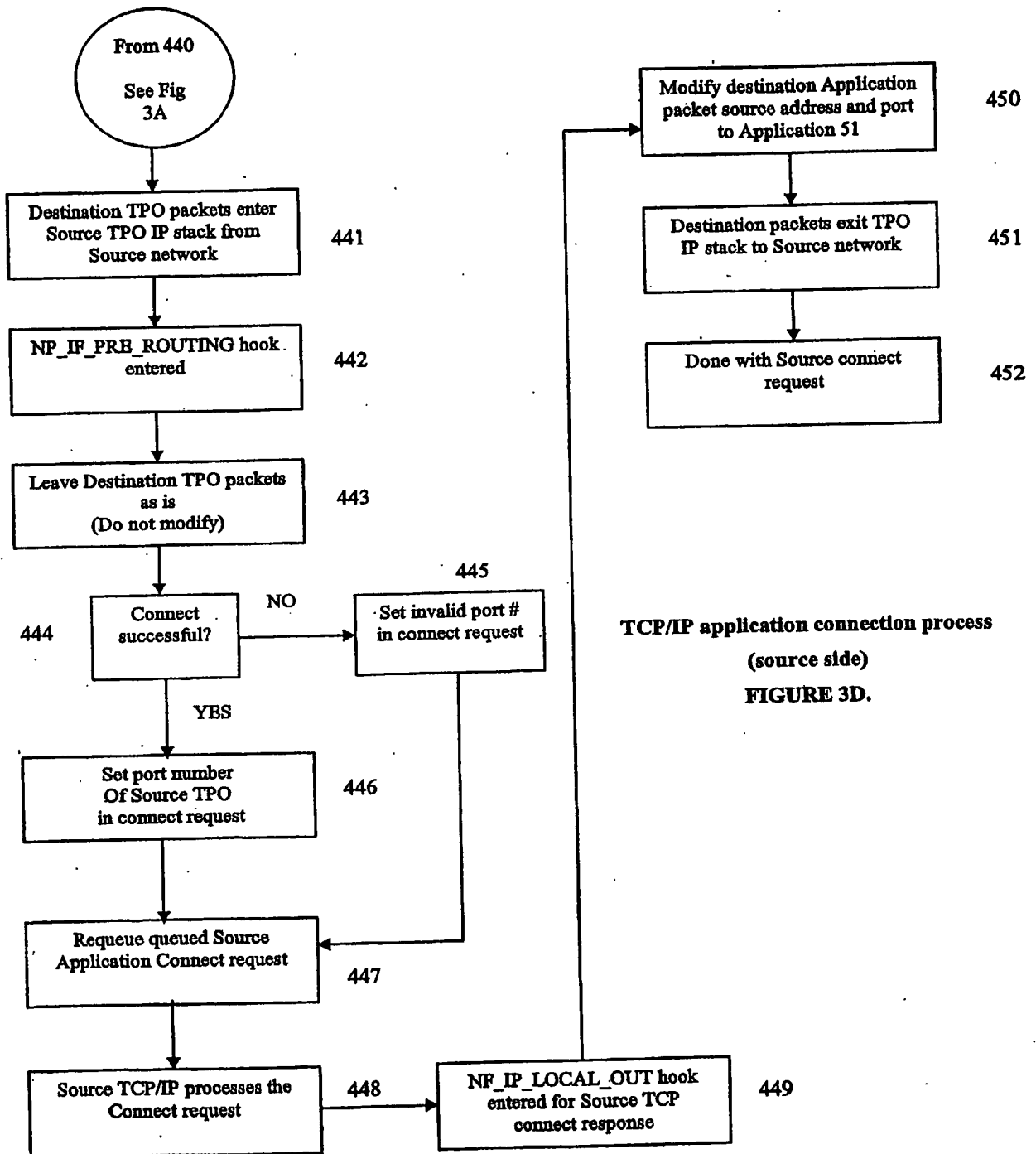


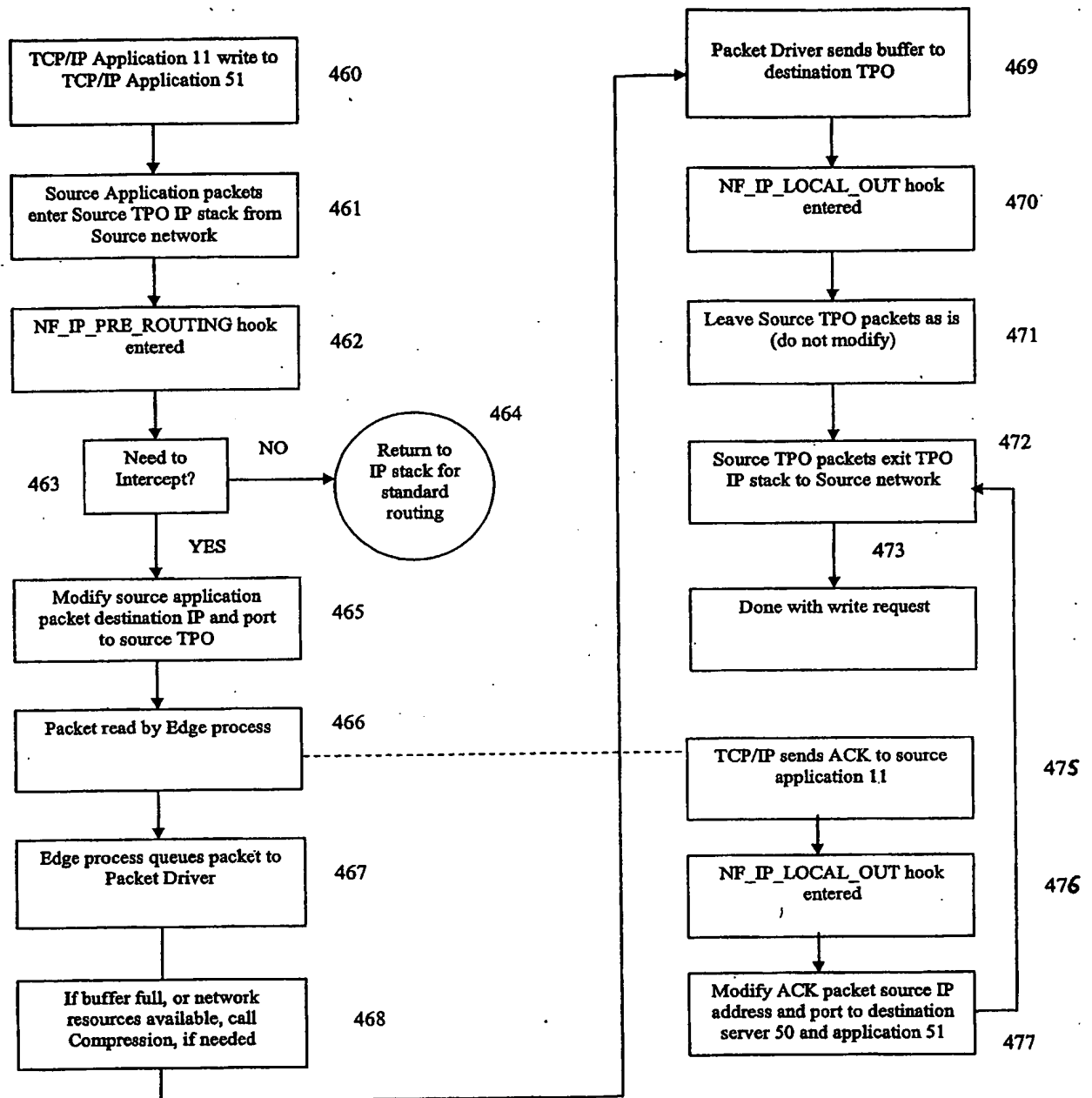
**TCP/IP Application Connection Process
(Destination Side)
FIGURE 3B.**



**TCP/IP Application Connection Process
(Destination Side)**

FIGURE 3C.

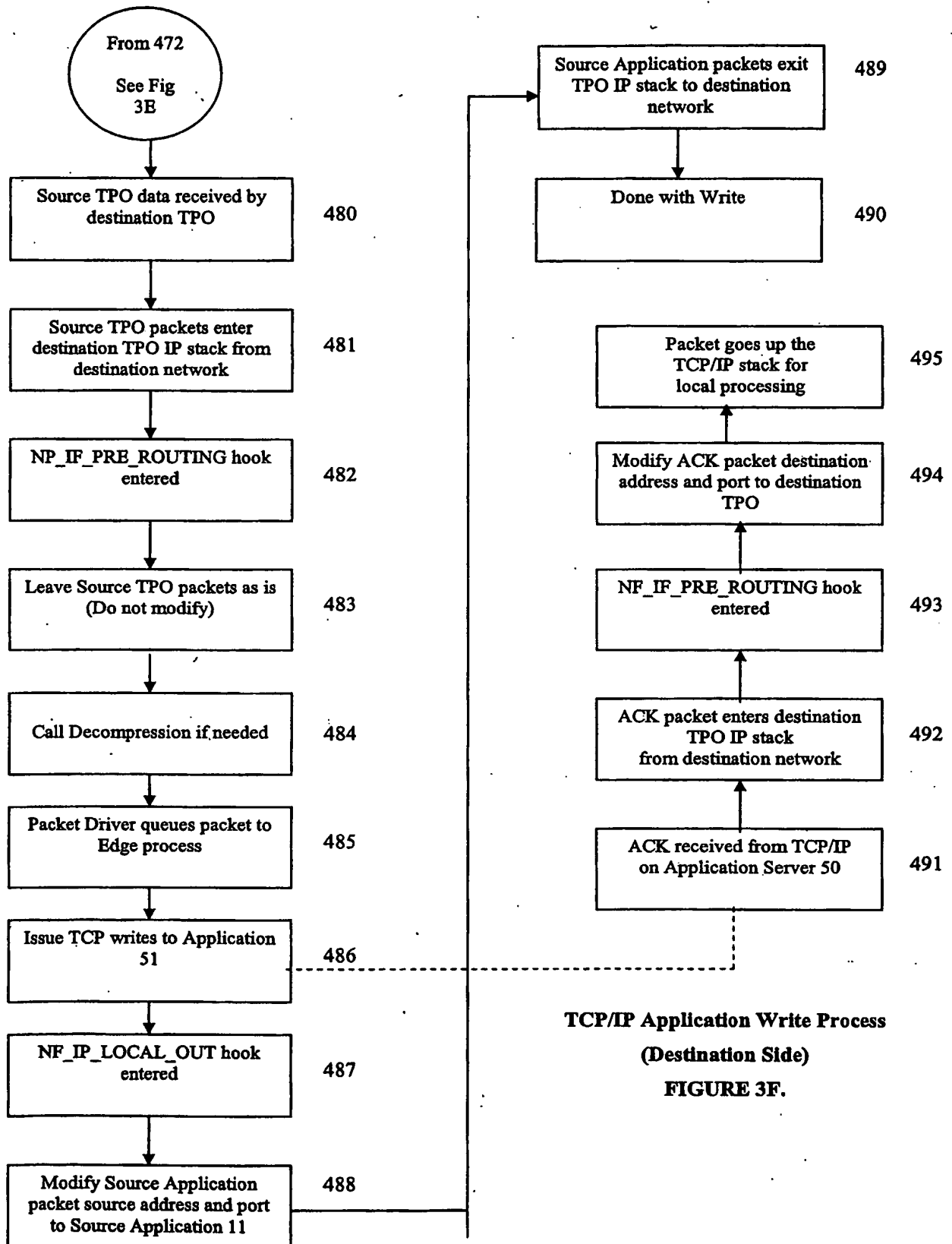




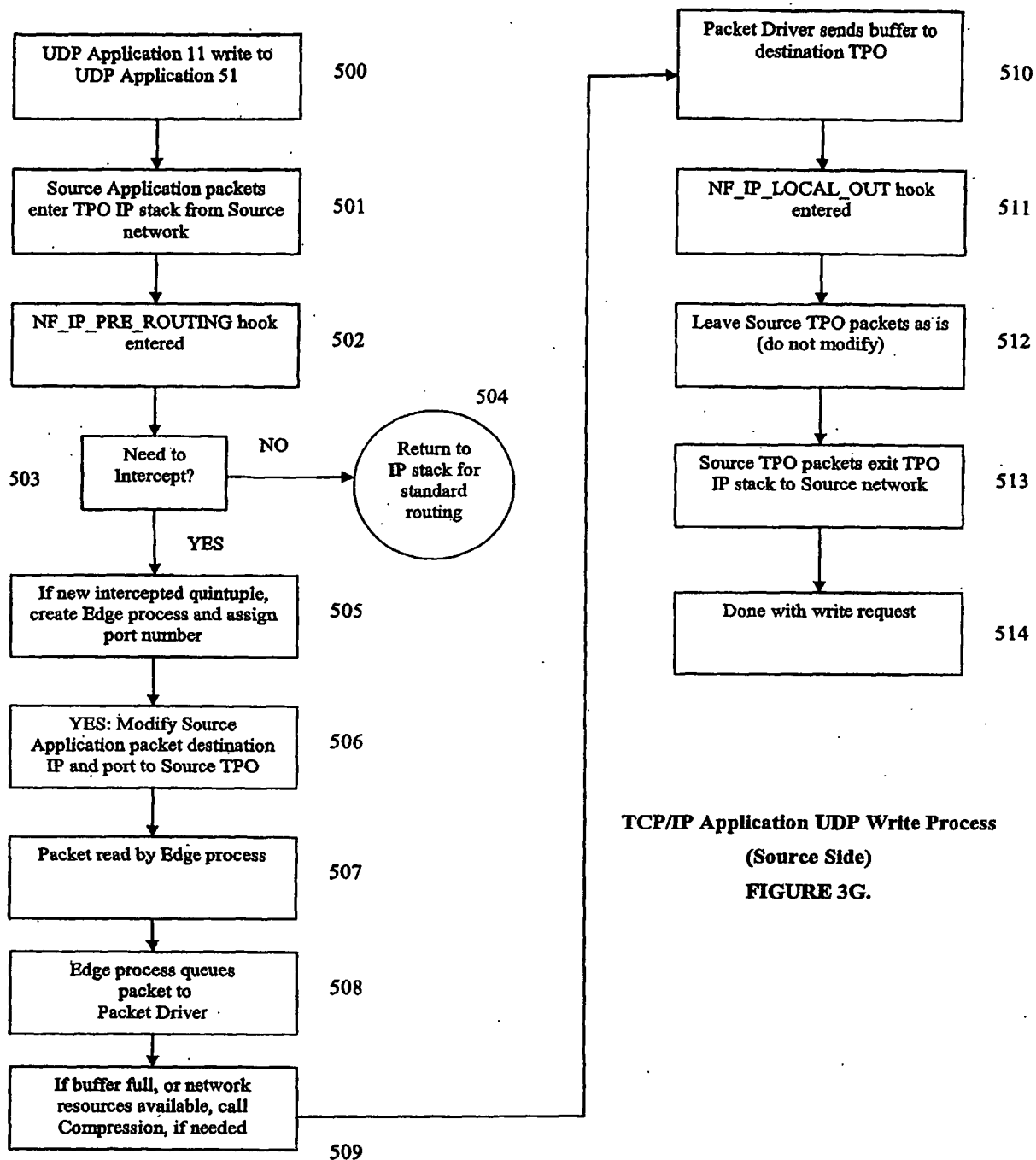
TCP/IP Application Write Process

(Source Side)

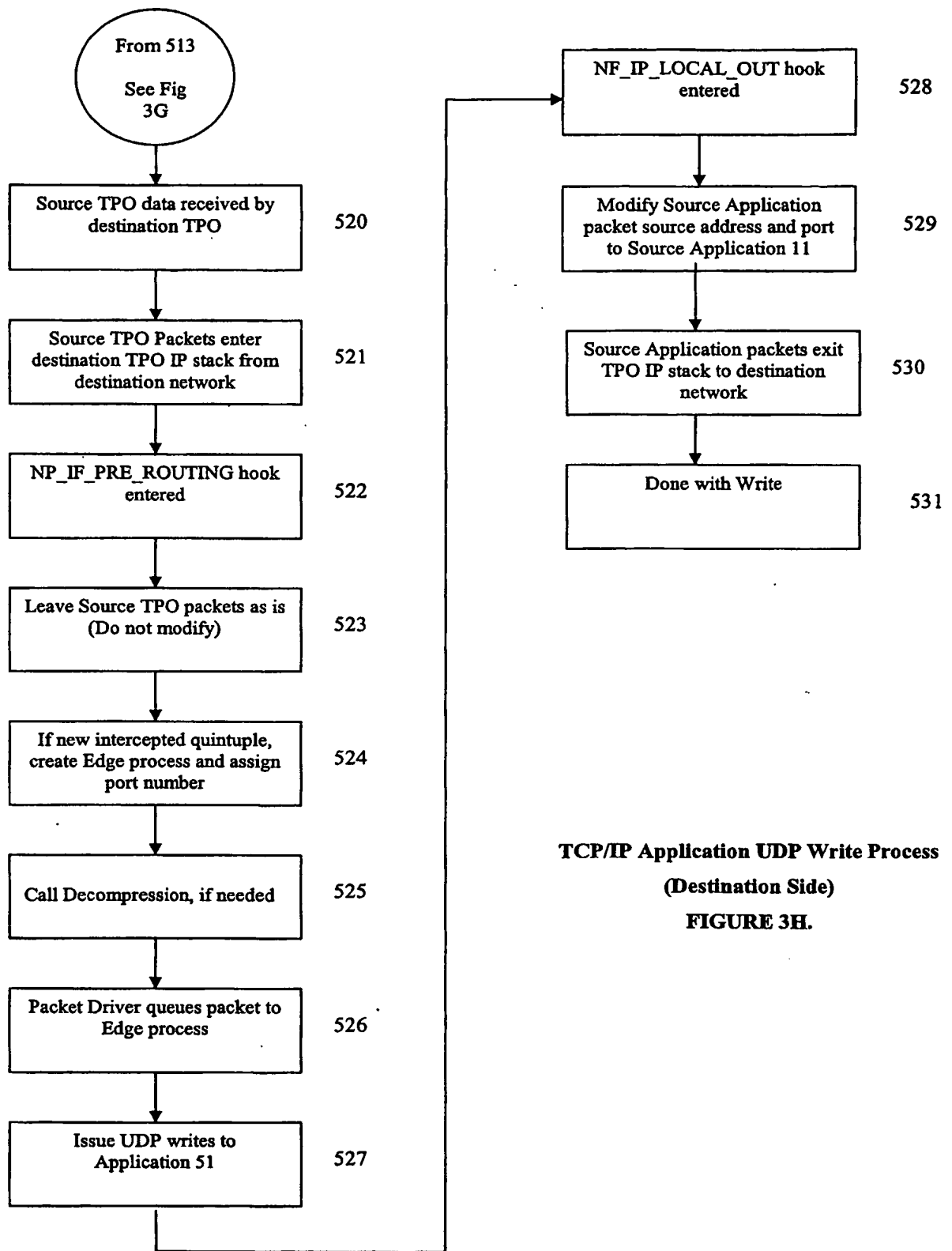
FIGURE 3E.



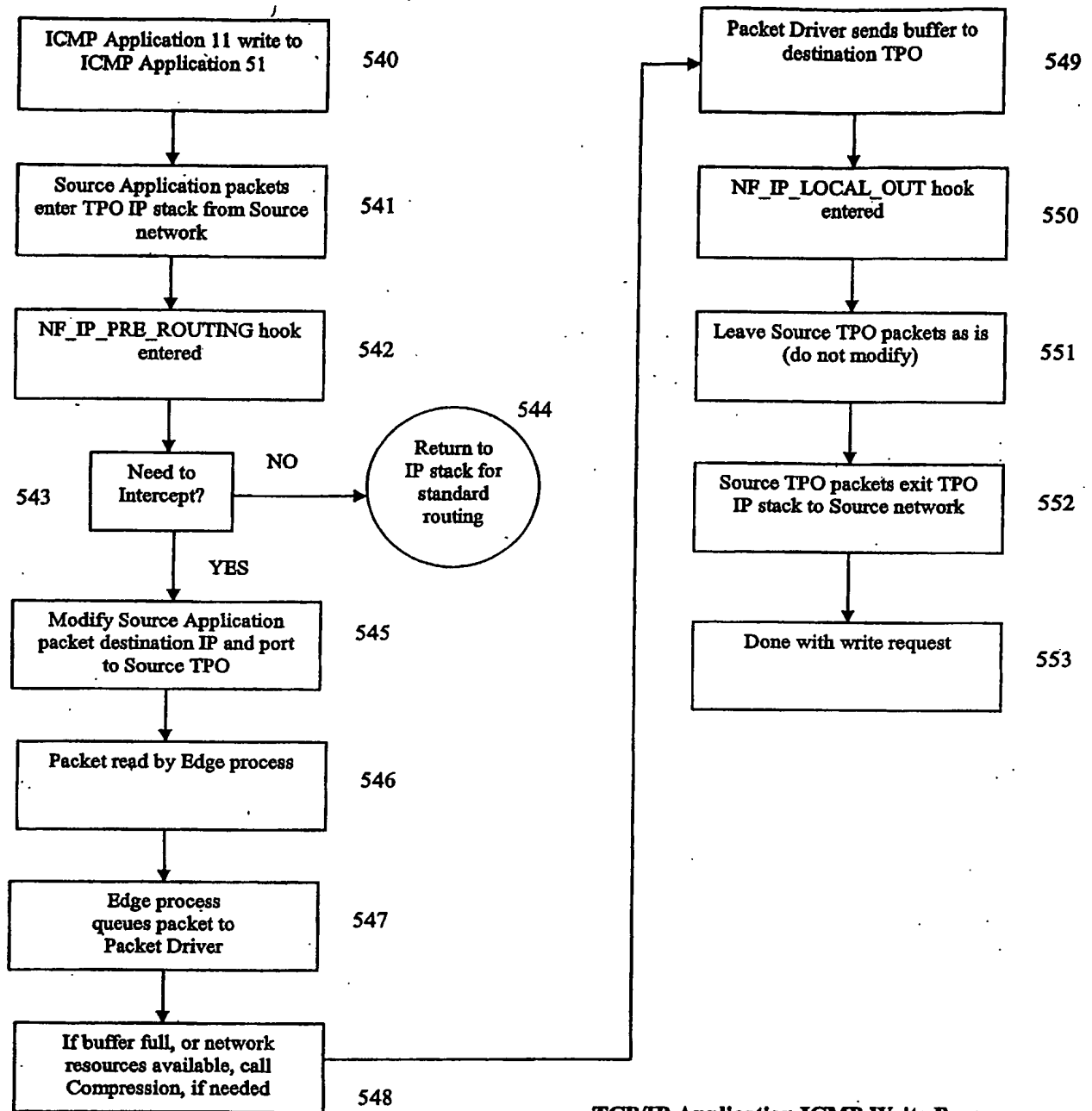
**TCP/IP Application Write Process
(Destination Side)
FIGURE 3F.**



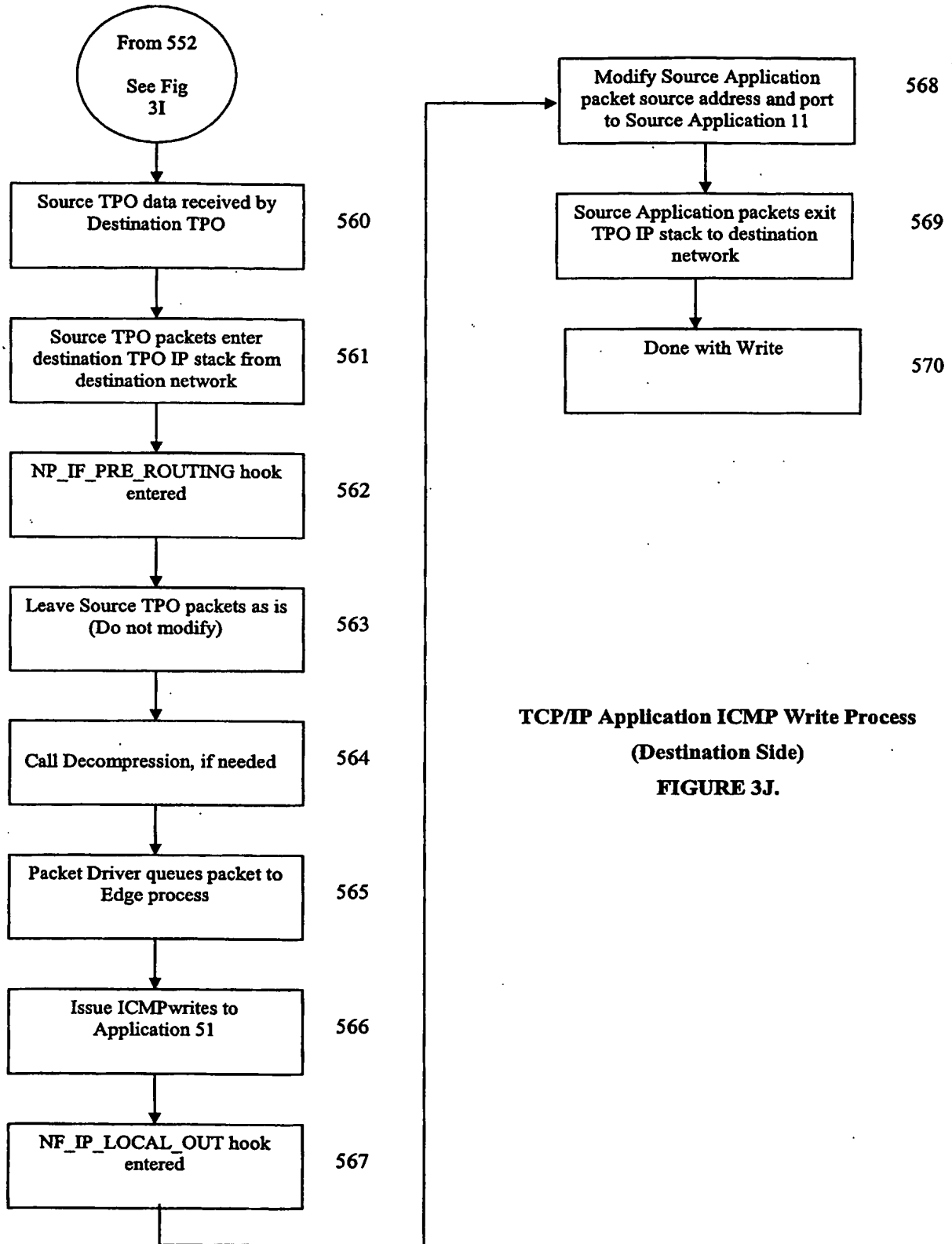
**TCP/IP Application UDP Write Process
(Source Side)
FIGURE 3G.**



**TCP/IP Application UDP Write Process
(Destination Side)
FIGURE 3H.**



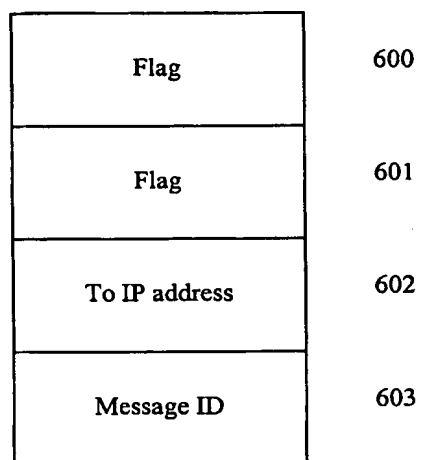
**TCP/IP Application ICMP Write Process
(Source Side)
FIGURE 3L.**



**TCP/IP Application ICMP Write Process
(Destination Side)
FIGURE 3J.**

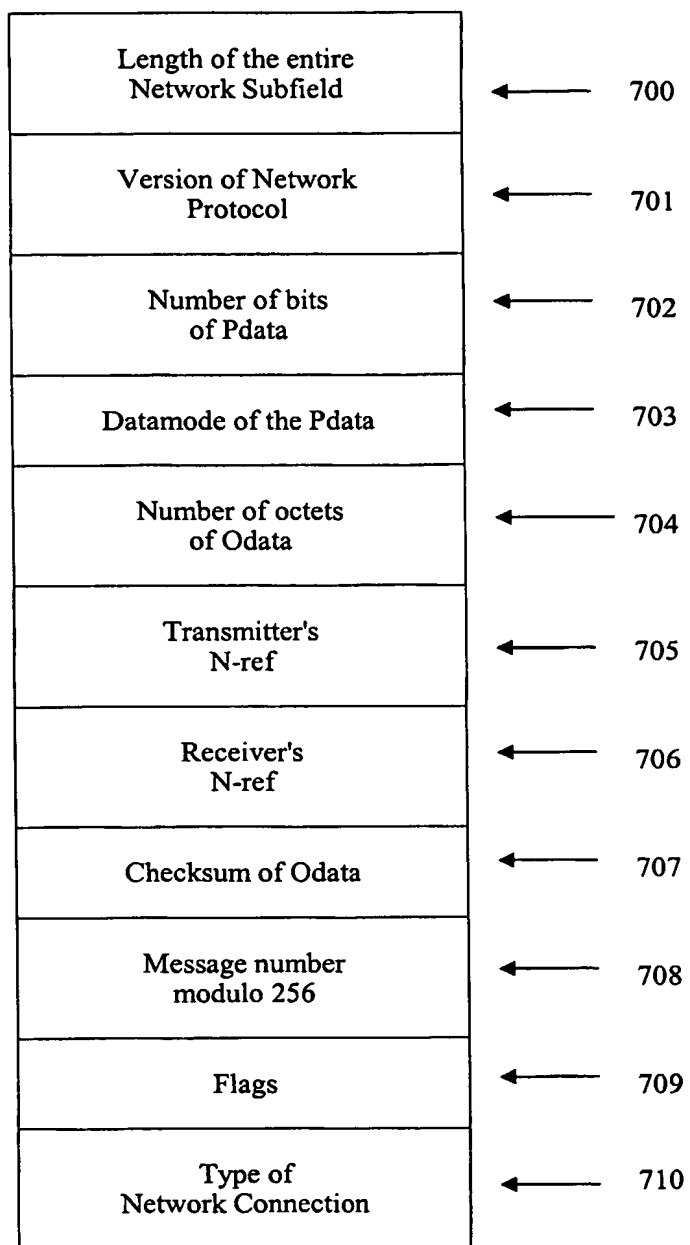
NRBSTAT: Status code	←	1300
NRBIND: Data type indication	←	1301
NRBLEN: Length of data	←	1302
NRBREQ: Request type	←	1303
NRBNREF: Connection Reference Number	←	1304
NRBBUFA: Buffer Address	←	1305
NRBBUFL: Buffer Length	←	1306
NRBDMODE: Datamode	←	1307
NRBTIME: Timeout value	←	1308
NRBCLASS: Class of service	←	1309
NRBMXRAT: Maximum data rate	←	1310
NRBBLKI: Maximum input buffer size	←	1311
NRBBLKO: Maximum output buffer size	←	1312
NRBPROTA: Address of protocol data	←	1313
NRBPROTL: Length of protocol data	←	1314
NRBCONN1: Connect application name	←	1315
NRBCONN2: Connect host name	←	1316

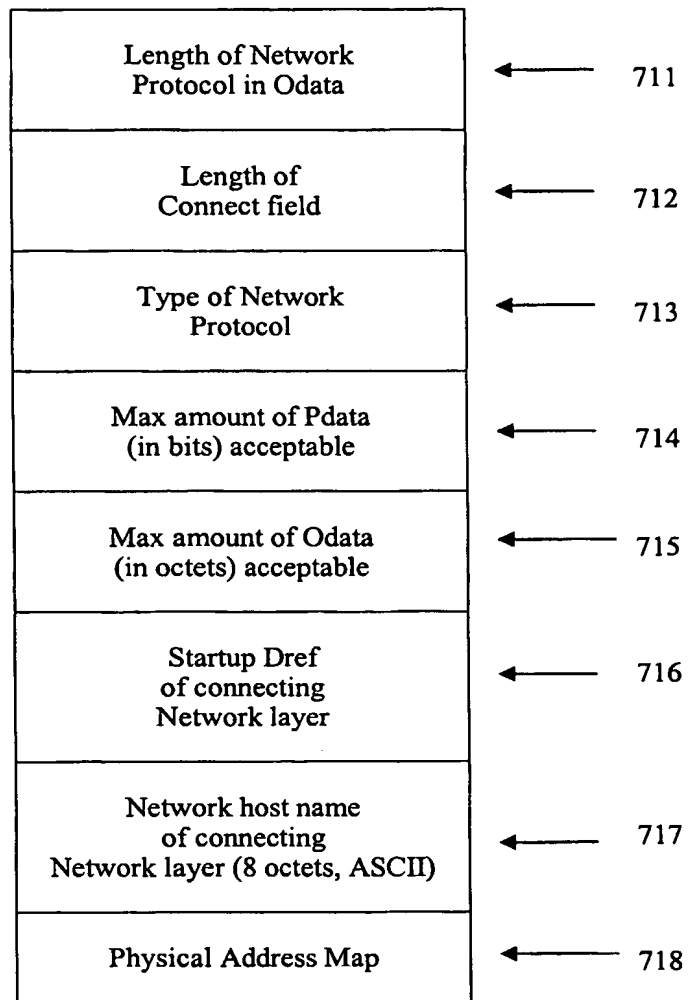
Data Mover Network Request Block Structure**FIGURE 4.**

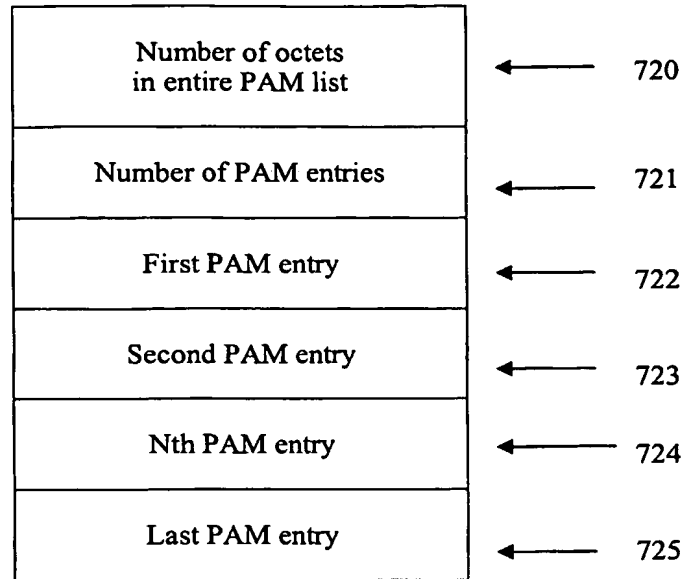


Data Mover Driver Protocol Data

FIGURE 5.

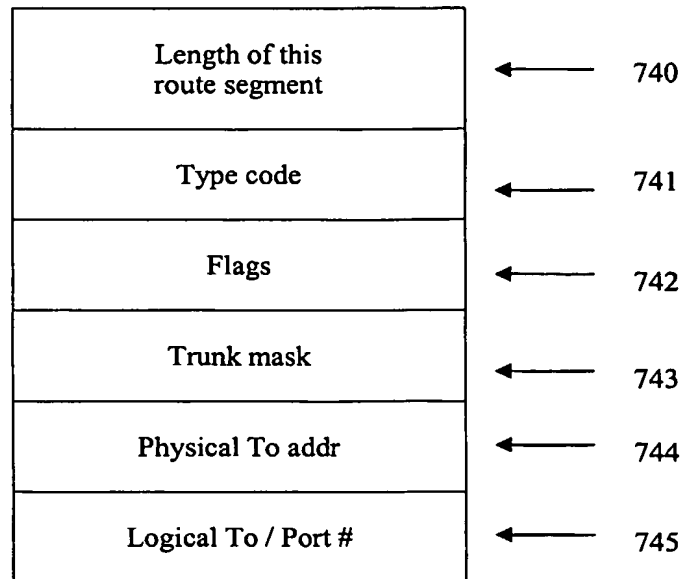
**Data Mover Network Message Header****FIGURE 6A.**

**Data Mover Network Connect / Confirm Protocol Data****FIGURE 6B.**

**Data Mover Physical Address Map List****FIGURE 6C.**

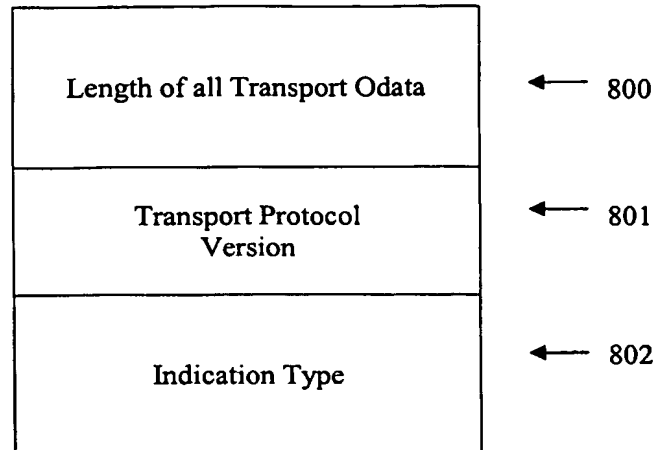
Length of PAM	← 730
Maximum transmission block size for this route	← 731
Maximum transmission rate for this route	← 732
Propagation delay for this route	← 733
Route	← 734

Data Mover Physical Address Map Entry**FIGURE 6D.**



Data Mover Physical Address Map Route

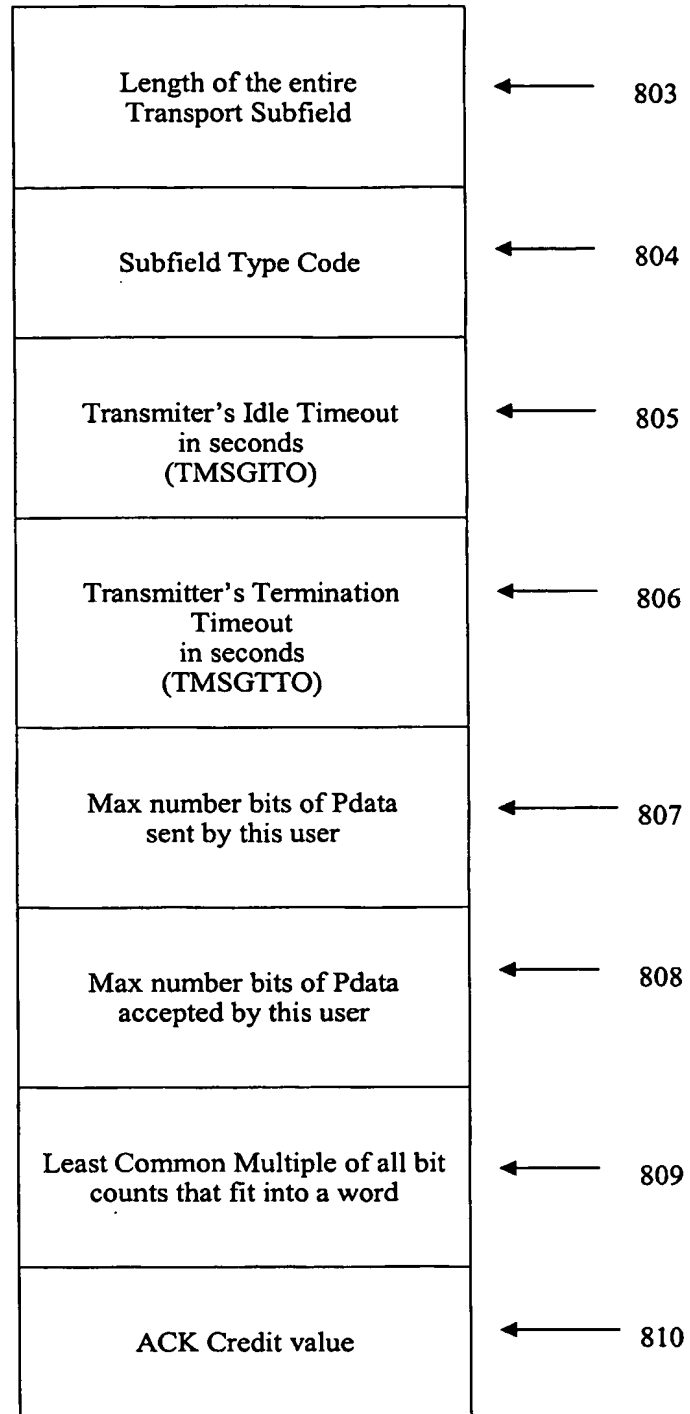
FIGURE 6E.

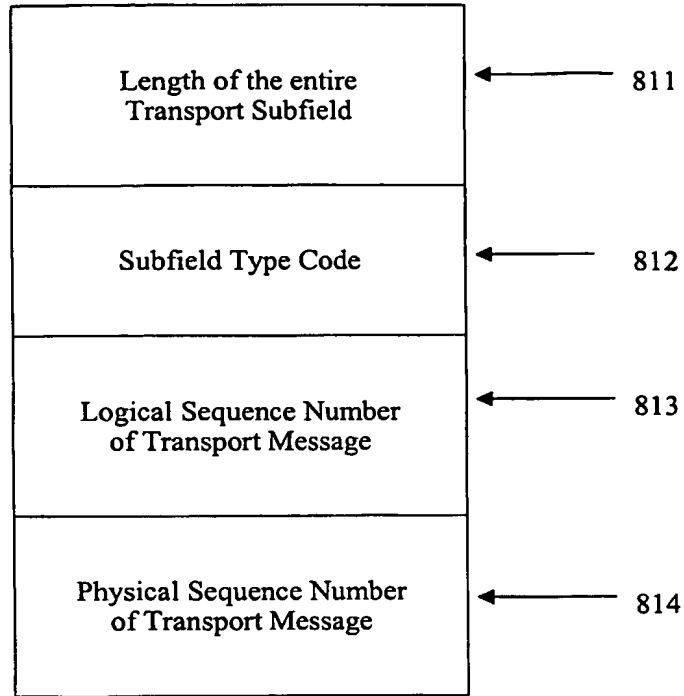


Data Mover Transport Protocol Base Field

FIGURE 7A.

The Transport Protocol Base Field is followed by one or more Transport Protocol Subfields (Figures 7B through 7E).

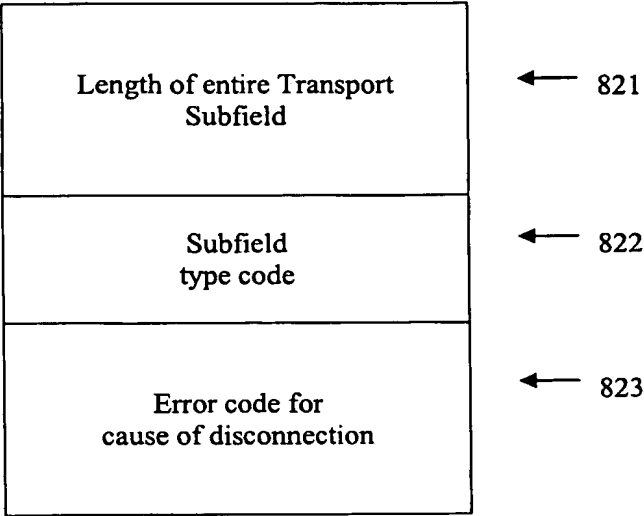
**Data Mover Transport Protocol Connect Subfield****FIGURE 7B.**



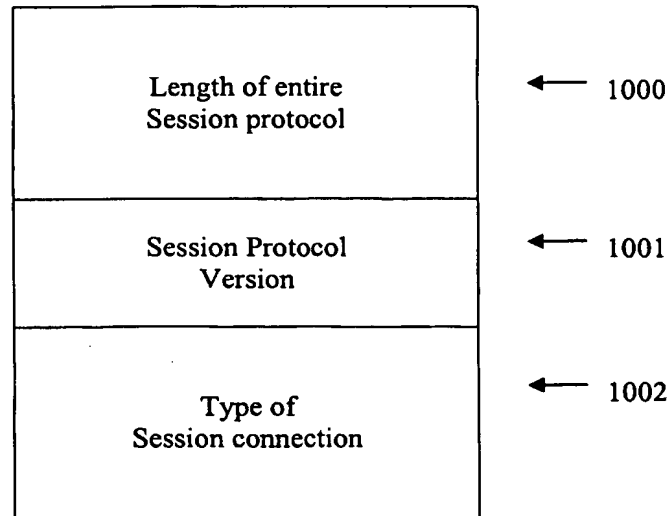
Data Mover Transport Protocol Data Subfield
FIGURE 7C.

Length of the entire Transport Subfield	← 815
Subfield Type code	← 816
Highest Physical Block Number sent from this connection side	← 817
Highest Physical Block Number detected on input by this side	← 818
Bit significant ACK/NAK of blocks received	← 819
Rate of data delivery of remote packet driver (KB/s) (TMSGSPD)	← 820

Data Mover Transport Protocol Acknowledgement Subfield**FIGURE 7D.**



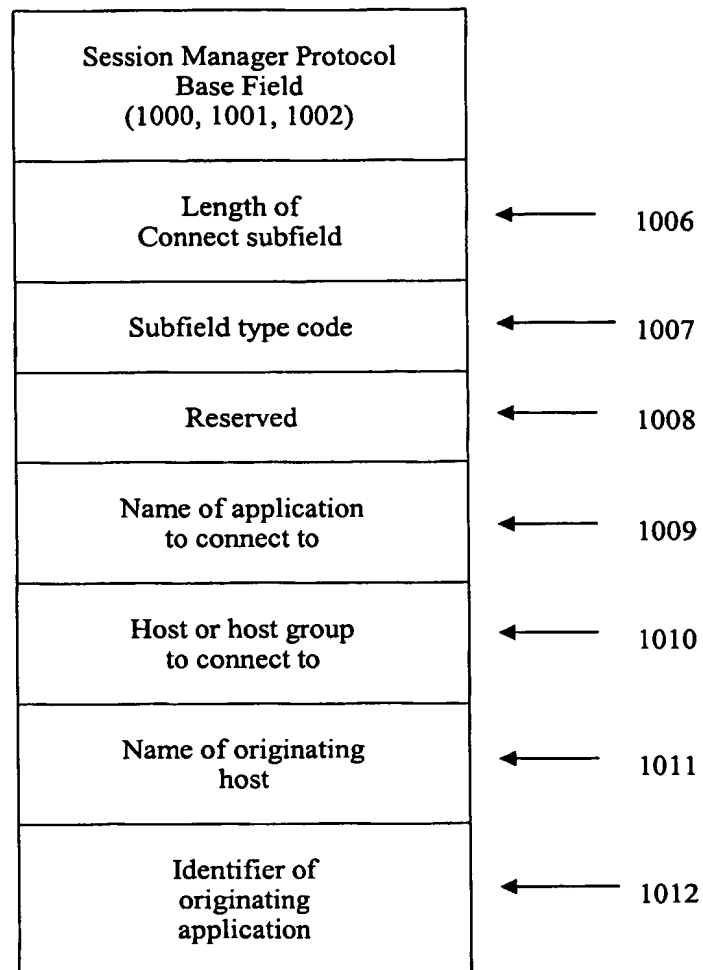
Data Mover Transport Protocol Disconnect Subfield
FIGURE 7E.

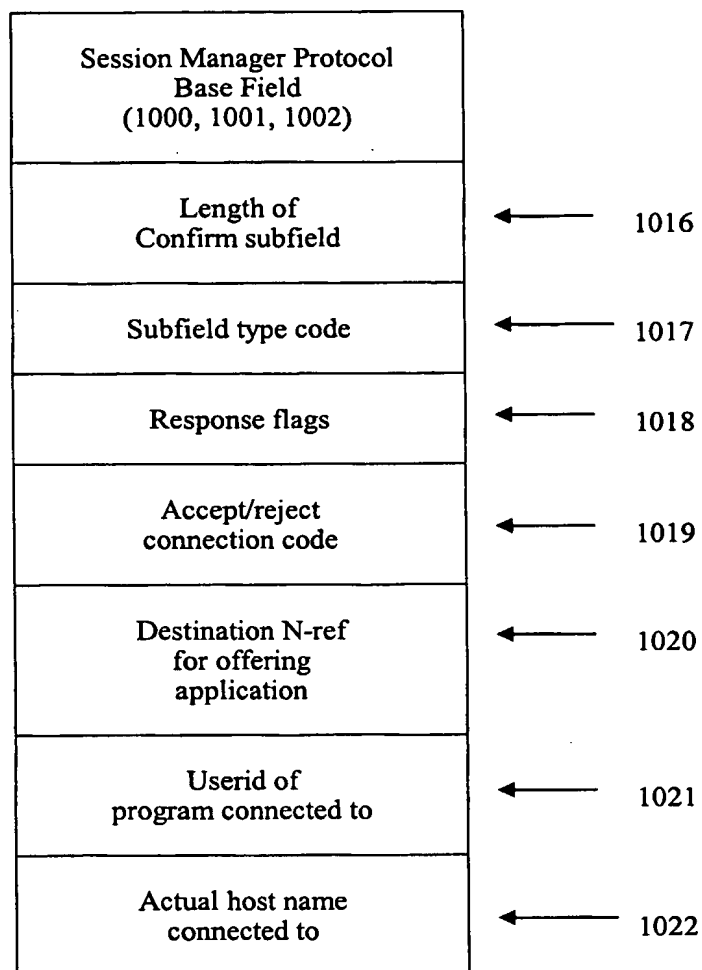


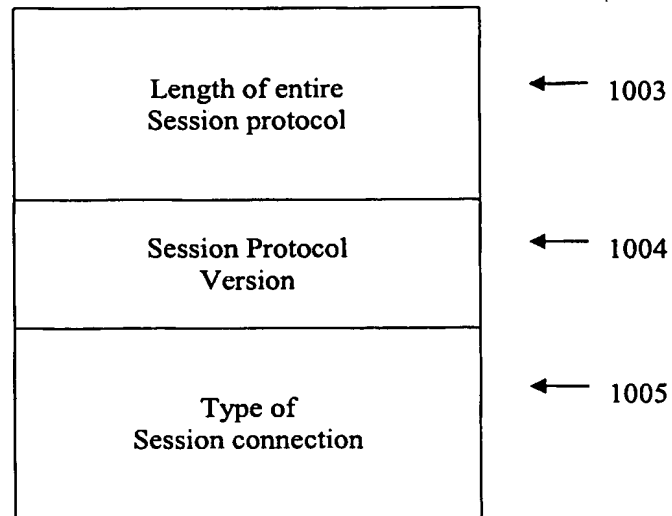
Data Mover Session Manager Protocol Base Field

FIGURE 8A.

The Session Manager Protocol Base Field is followed by either the Session Manager Protocol Connect or Confirm Subfields (Figures 8B through 8C).

**Data Mover Session Manager Protocol Connect Subfield****FIGURE 8B.**

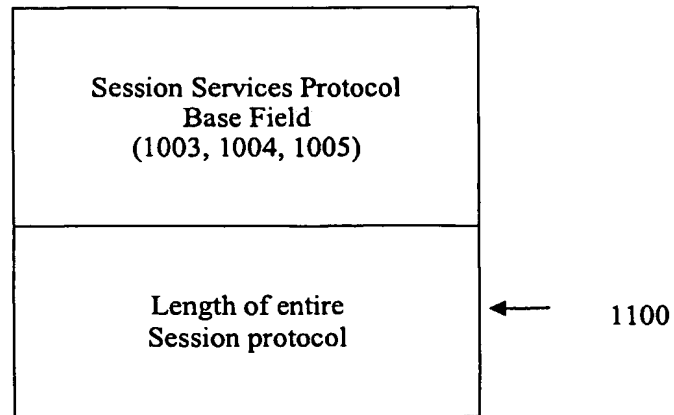
**Data Mover Session Manager Protocol Confirm Subfield****FIGURE 8C.**



Data Mover Session Services Protocol Base Field

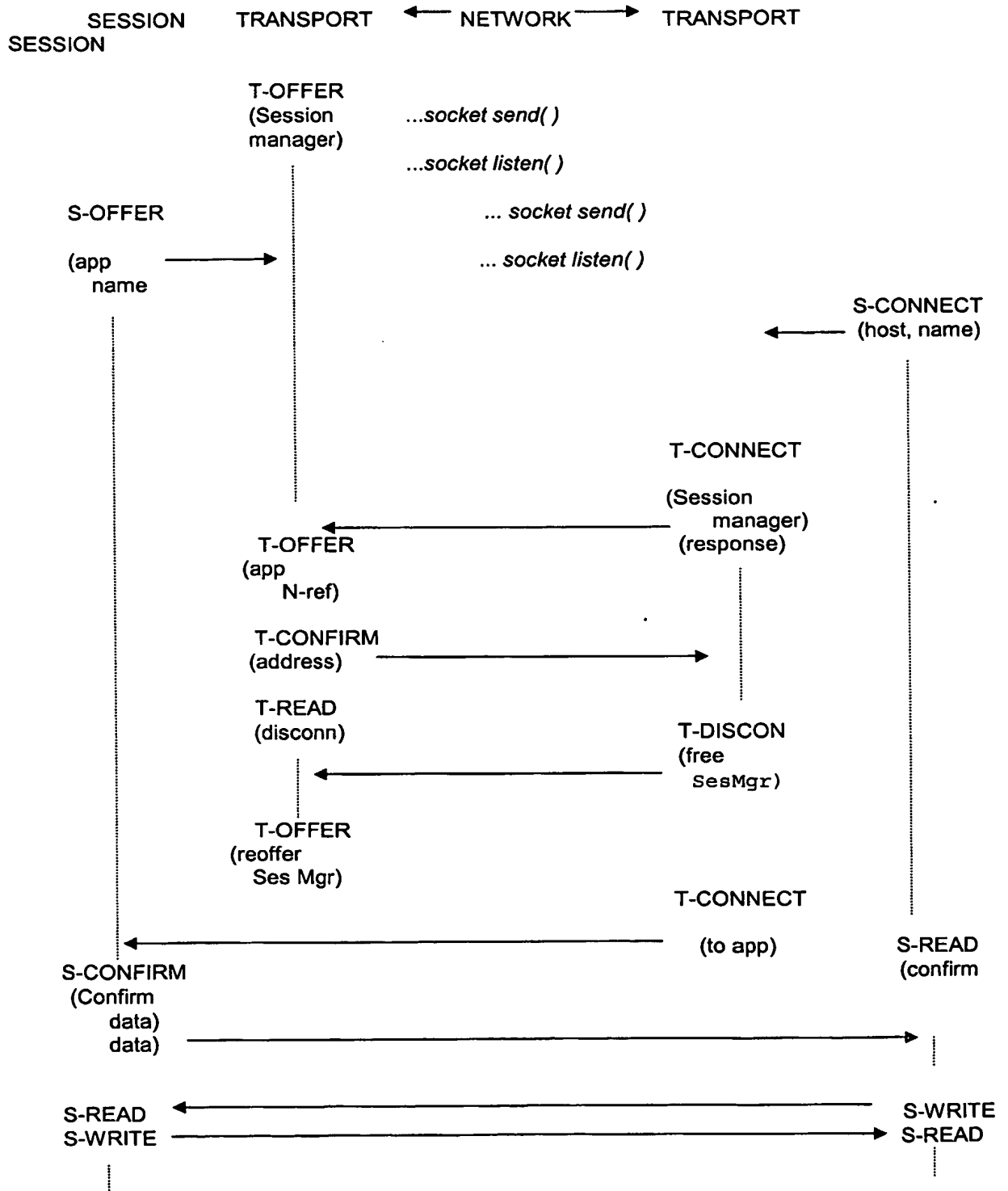
FIGURE 8D.

The Session Services Protocol Base Field is followed by the Session Services Protocol Null Subfield (Figure 8E).



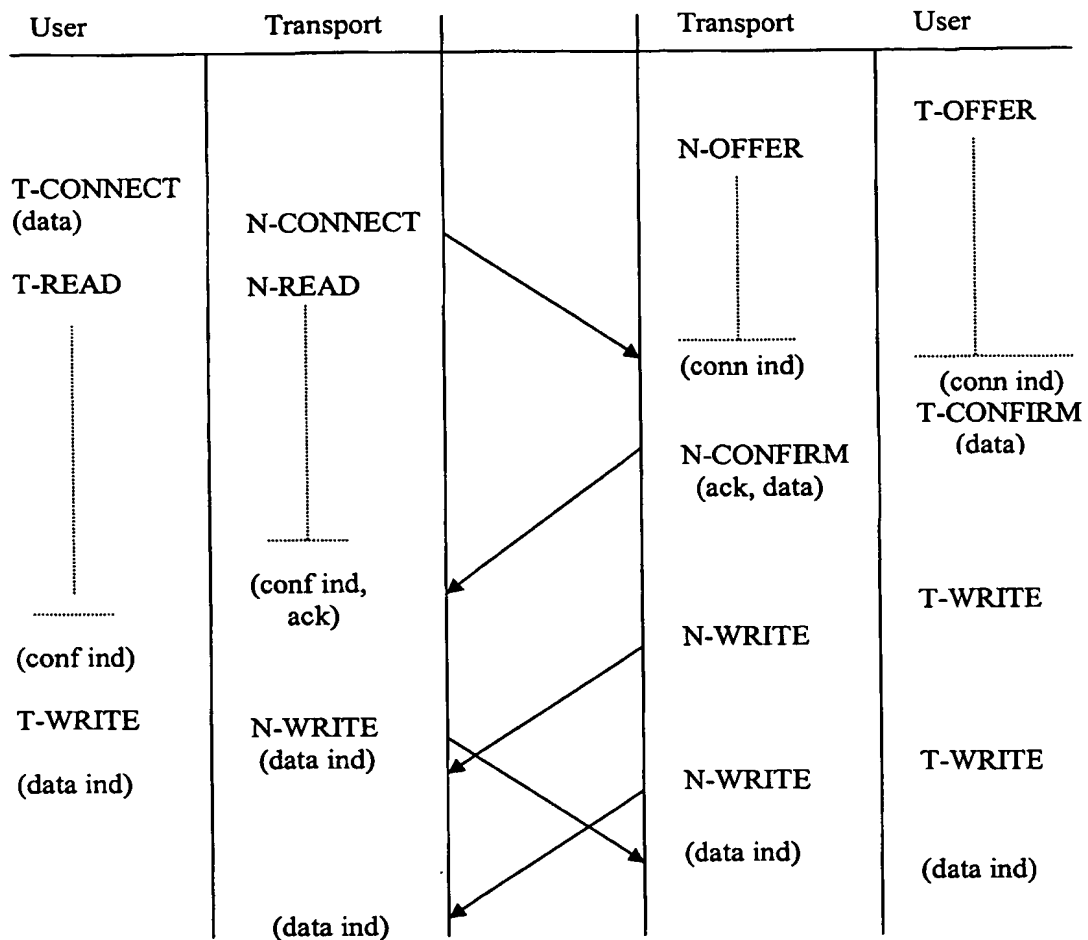
Data Mover Null Session Protocol Subfield

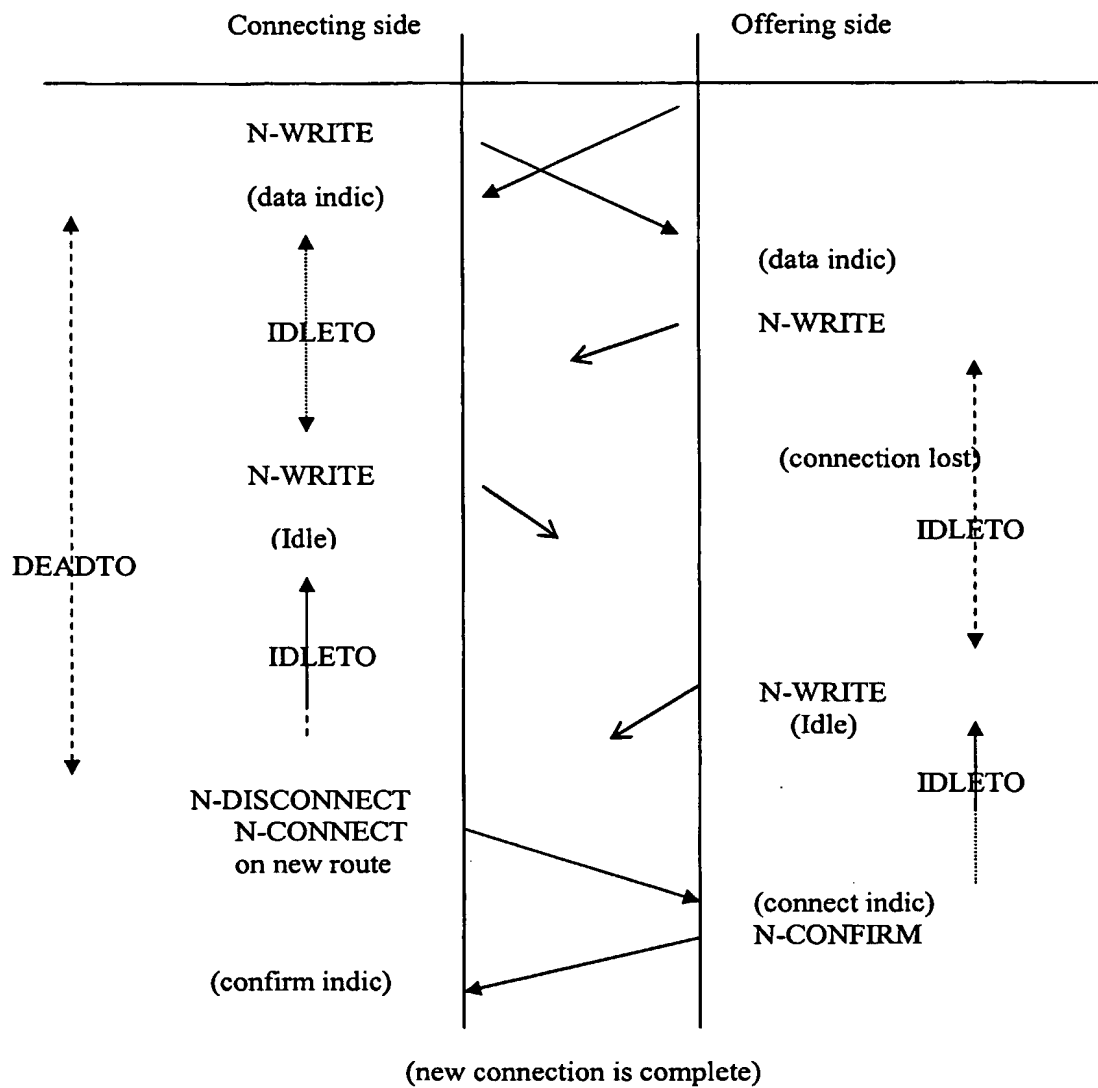
FIGURE 8E.

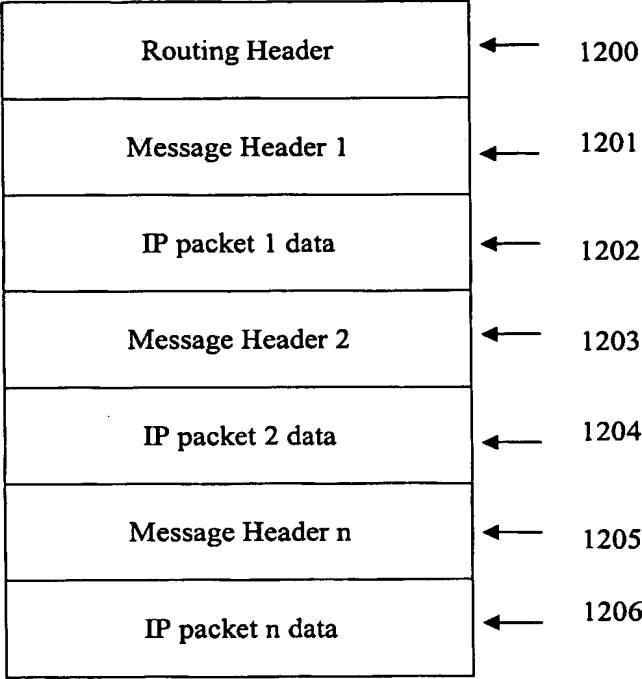


Data Mover Session Connection Sequence

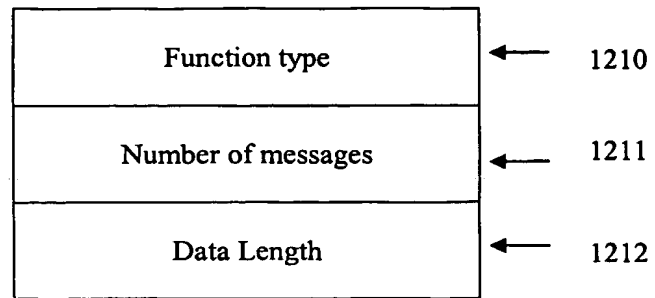
FIGURE 8F.

**Data Mover Transport Connection Sequence****FIGURE 8G.**

**Data Mover Transport Reconnection Sequence****FIGURE 8H.**

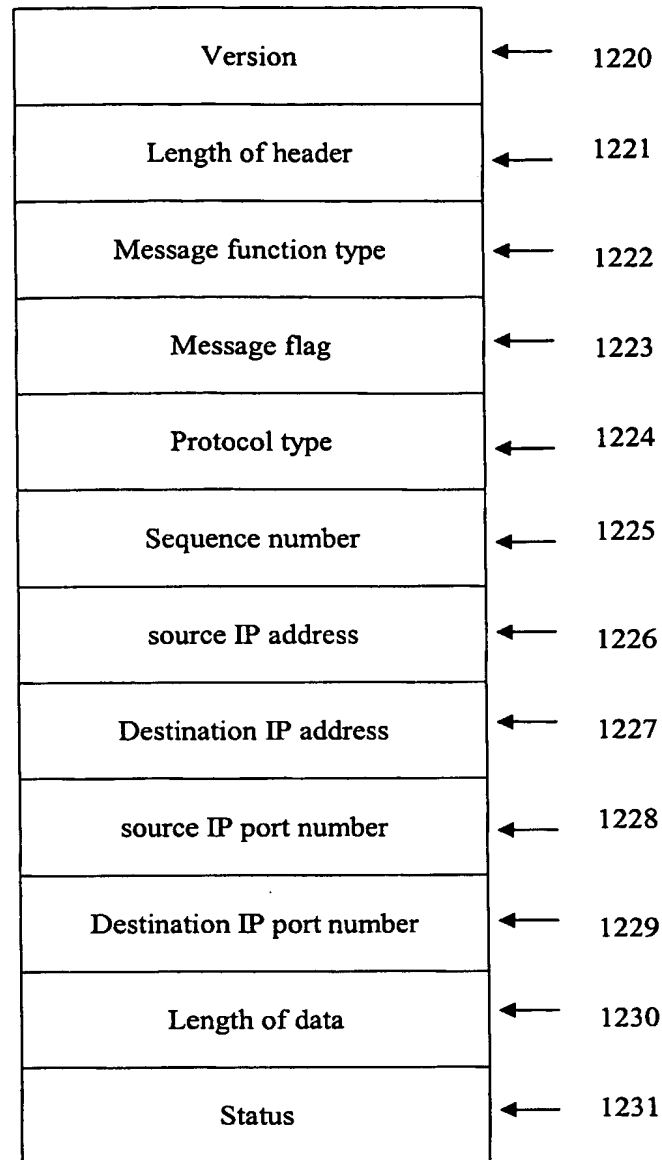


Packet Driver Protocol Data
FIGURE 9A.



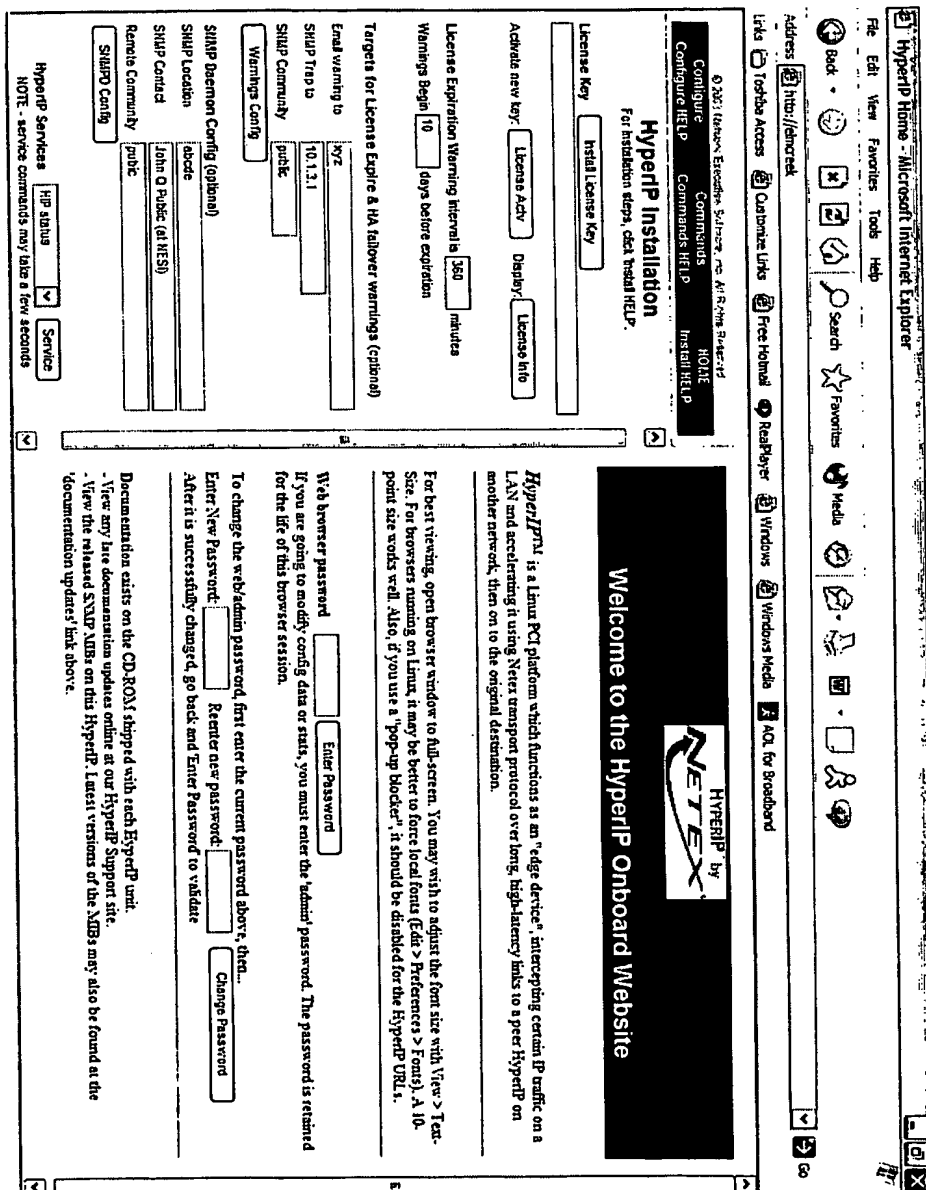
Packet Driver Protocol Data - Routing Header

FIGURE 9B.



Packet Driver Protocol Data - Message Header

FIGURE 9C.



Sample TPO Installation Browser Screen

HyperIP Home - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back - Search - Favorites - Media - - - - -

Address: http://lanrec

Units: Toolbar Access Customize Links Free Manual RealPlayer Windows Windows Media AOL for Broadband

Configure Commands HOME
Continue HELP COMMENTS HELP Initial HELP

HyperIP Configuration

PASSWORD is required for all except Display.

Local IP Hostname: ethercat.netcsw.com

Default Gateway: 10.1.2.50

Home BaseServer: 10.1.3.1

Local Domain: netcsw.com

Search List: netcsw.com

Mail Hub: 10.1.3.111

SysConfig: SysConfig Display

Interface [en0]

Gateway: name Mask 255.255.255.0

F Config F Display

Click here for Advanced System Configuration options such as Static Routes, Config ServerName or Timezone.

Test to Paddr: 10.1.3.1 TraceRoute

Select your site topology (HELP)

A - no hot standby
B - single hot standby
C - dual hot standby

Hot1 - not implemented in this release Cfg Hot standby

HyperIP Services: HP status Service

NOTE - service commands may take a few seconds

Welcome to the HyperIP Onboard Website

HyperIP™ is a Linux PC platform which functions as an "edge device", intercepting certain IP traffic on a LAN and accelerating it using NetStream protocol over long, high-latency links to a peer HyperIP on another network, then on to the original destination.

For best viewing, open browser window to full screen. You may wish to adjust the font size with View > Text Size. For browsers running on Linux, it may be better to force local fonts (Edit > Preferences > Fonts). A 10-point size works well. Also, if you use a "pop-up blocker", it should be disabled for the HyperIP URL.

Web browser password: Enter Password

If you are going to modify config data or run, you must enter the "admin" password. The password is retained for the life of this browser session.

To change the webadmin password, first enter the current password above, then:

Enter New Password: Reenter new password: Change Password

After it is successfully changed, go back and Enter Password to validate.

Documentation exists on the CD-ROM shipped with each HyperIP unit.

- View any last documentation updates online at our HyperIP Support site.
- View the released SSHP XLibs on this HyperIP. Latest versions of the XLibs may also be found at the "documentation updates" link above.

Sample TPO Configuration Browser Screen

FIGURE 11.

HyperIP Home - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address: http://netex.com

Links: Toshiba Access Customer Links Free Manual NetPlayer Windows Windows Media AOL for Broadband

Configure Commands Commands HELP HOME
 Configure HELP Commands HELP Install HELP

HyperIP Maintenance Commands

The SET password is required for all except Lists & Displays

Diagnostic Information

DumpList DumpReset DumpDataAs

DumpDisplay DumpInfo the most recent display

to Host: [ip.netex.com]

UserID anonymous Password box

Use Command Display HyperIP State

Update HyperIP Code Updates UpdateReset

Retrieve an Update File from Host [10.1.1.1]

UserID Password [sgn@netex.com]

anonymous

Directory downloadshyperip

Update File hyperip-3.0.21

Apply Update File above UpdateApply

Note: Update & UpdateApply may take a few seconds to complete

Welcome to the HyperIP Onboard Website

HyperIP is a Linux PCI platform which functions as an "edge device", intercepting certain IP traffic on a LAN and accelerating it using Netex transport protocol over long, high-latency links to a peer HyperIP on another network, then on to the original destination.

For best viewing, open browser window to full-screen. You may wish to adjust the font size with View > Text-Size. For browsers running on Linux, it may be better to force local fonts (Edit > Preferences > Fonts). A 10-point size works well. Also, if you use a "pop-up blocker", it should be disabled for the HyperIP URL.

Web browser password Enter Password

If you are going to modify config data or files, you must enter the admin password. The password is retained for the life of this browser session.

To change the web/admin password, first enter the current password above, then...

Enter New Password: Retenter new password: Change Password

After it is successfully changed, go back and Enter Password to validate

Documentation exists on the CD-ROM shipped with each HyperIP unit.

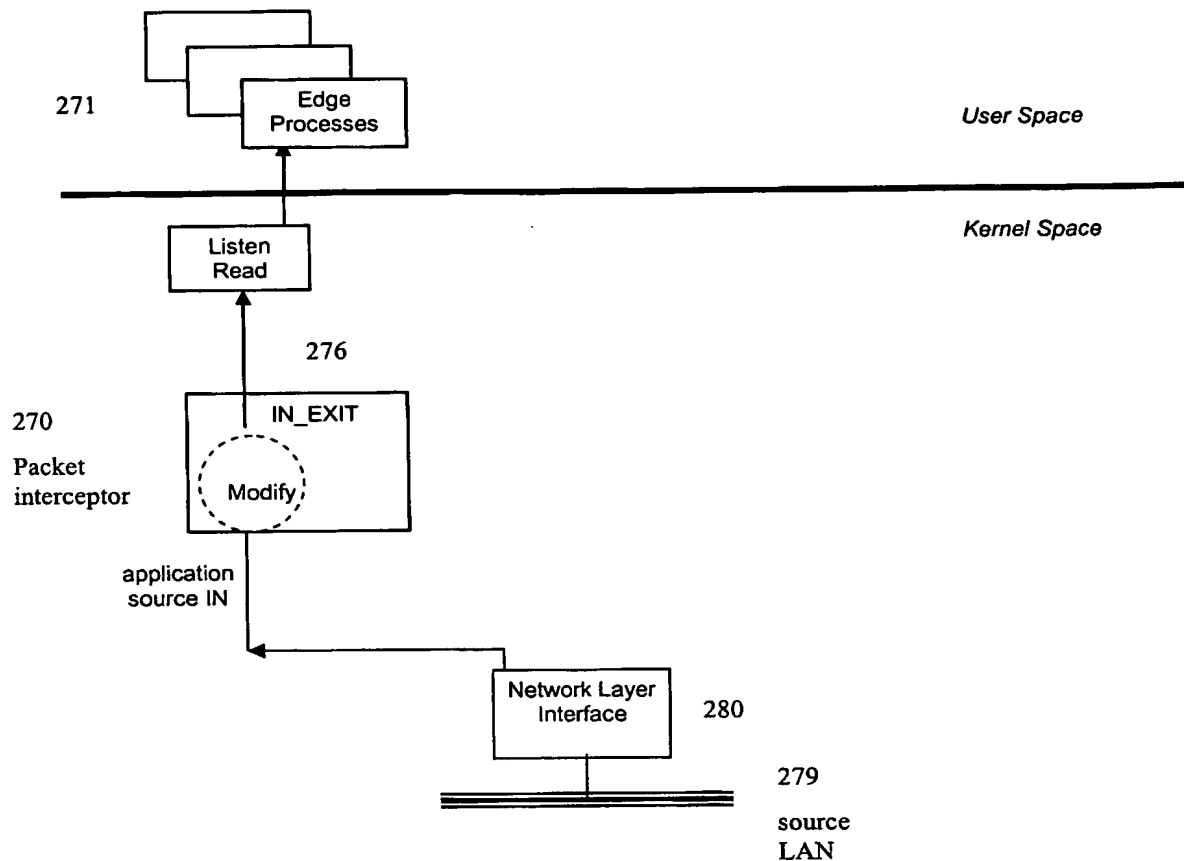
- View any late documentation updates online at our HyperIP Support site.

- View the released SNIIP URLs on this HyperIP. Latest versions of the MIBs may also be found at the "documentation updater" link above.

Sample TPO Commands Browser Screen

FIGURE 12.

Source TPO packet flow

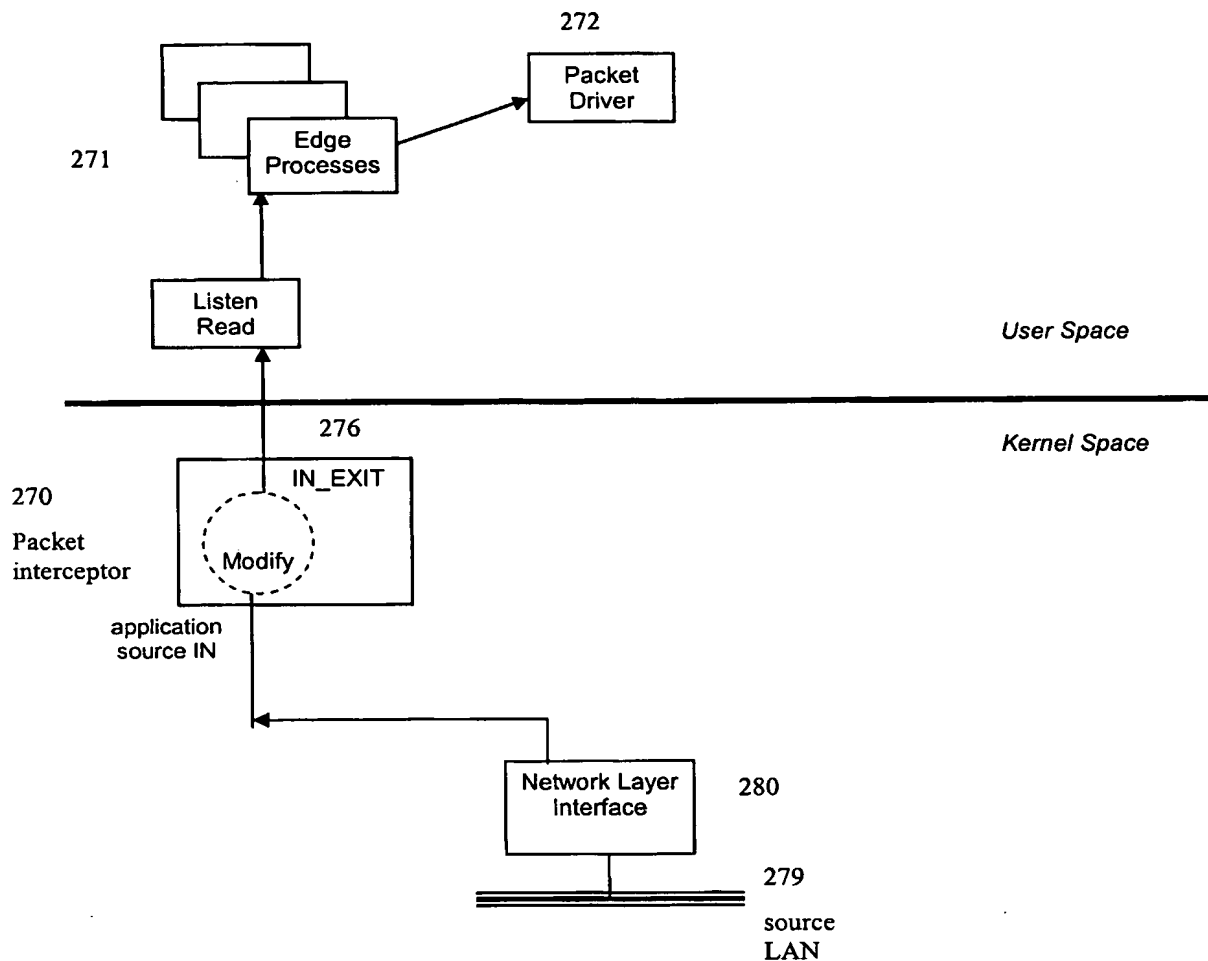


- ☐ Incoming source application IP packets on source LAN
- ☐ Packets flow through network layer into IN_EXIT
- ☐ Packet interceptor changes destination IP address and port to source TPO IP address and edge processor port
- ☐ Packets are read by edge processor

Source TPO Packet Flow – Application Source-in Packet Interceptor

Figure 13.

Source TPO packet flow

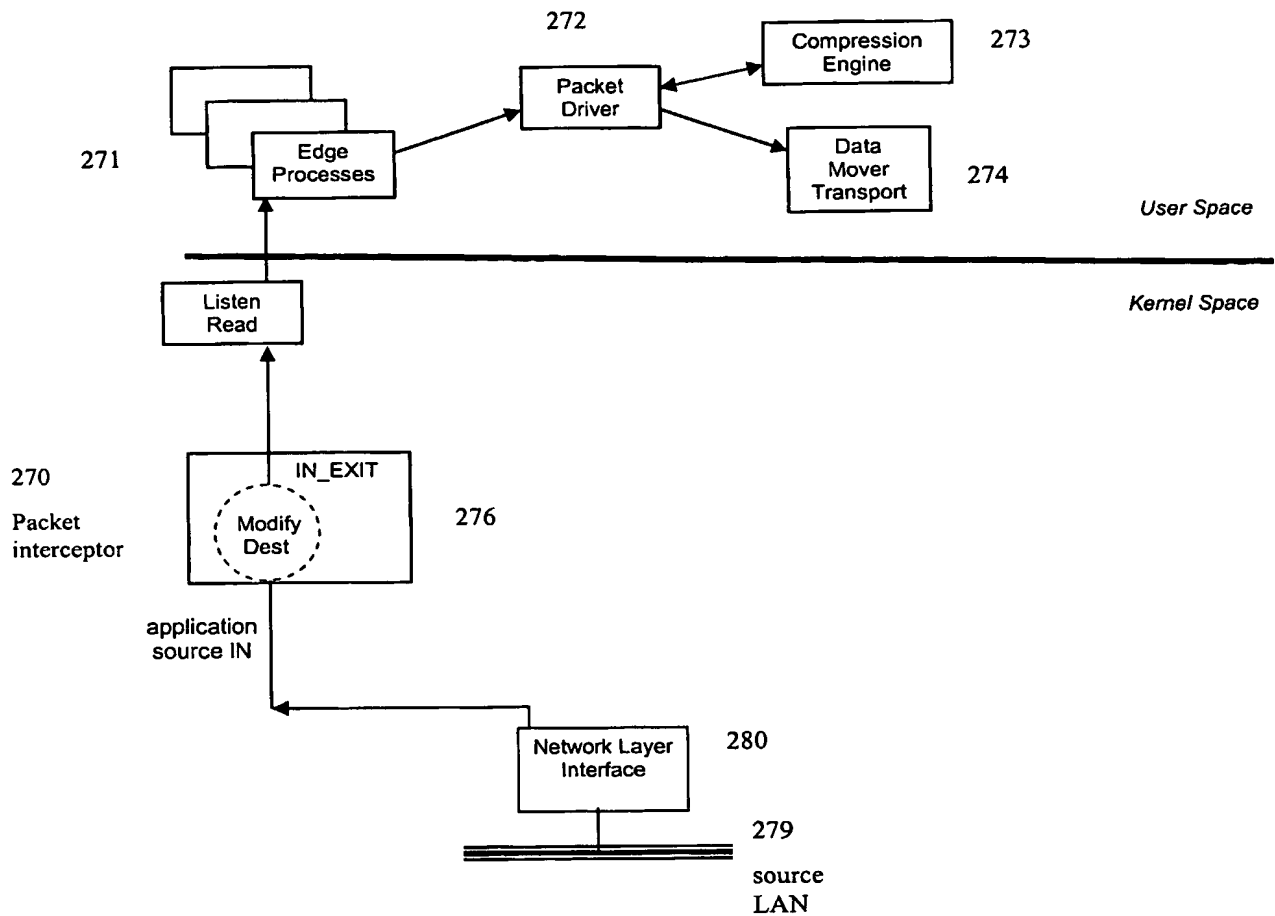


☐ Packets are delivered from edge process to packet driver

Source TPO Packet Flow – Application Source-in Packet Delivery

Figure 14.

Source TPO packet flow

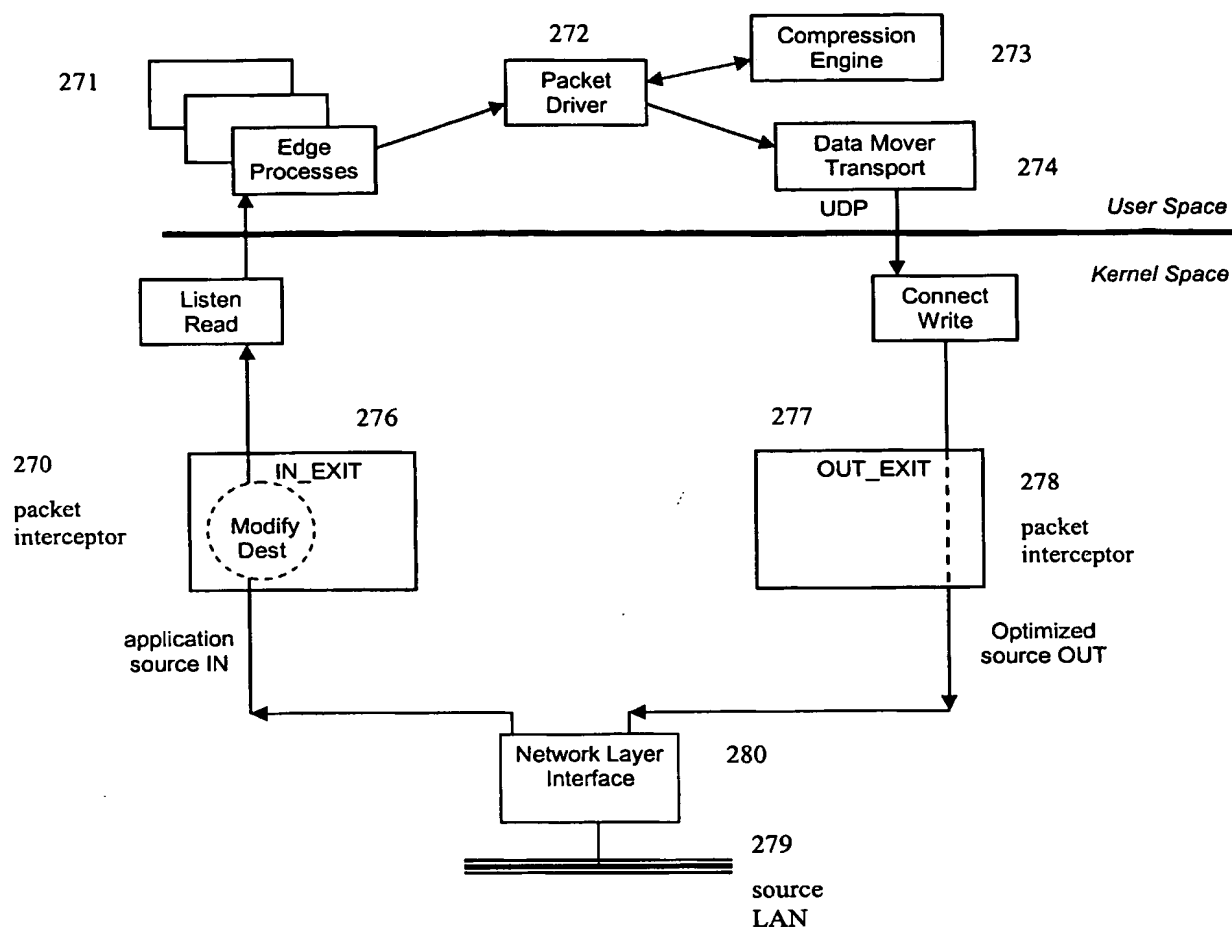


- ☐ Packet driver aggregates packets and passes them to compression engine
- ☐ Compressed aggregated packets are returned to data mover

Source TPO Packet Flow – Aggregated Packet Compression

Figure 15.

Source TPO packet flow

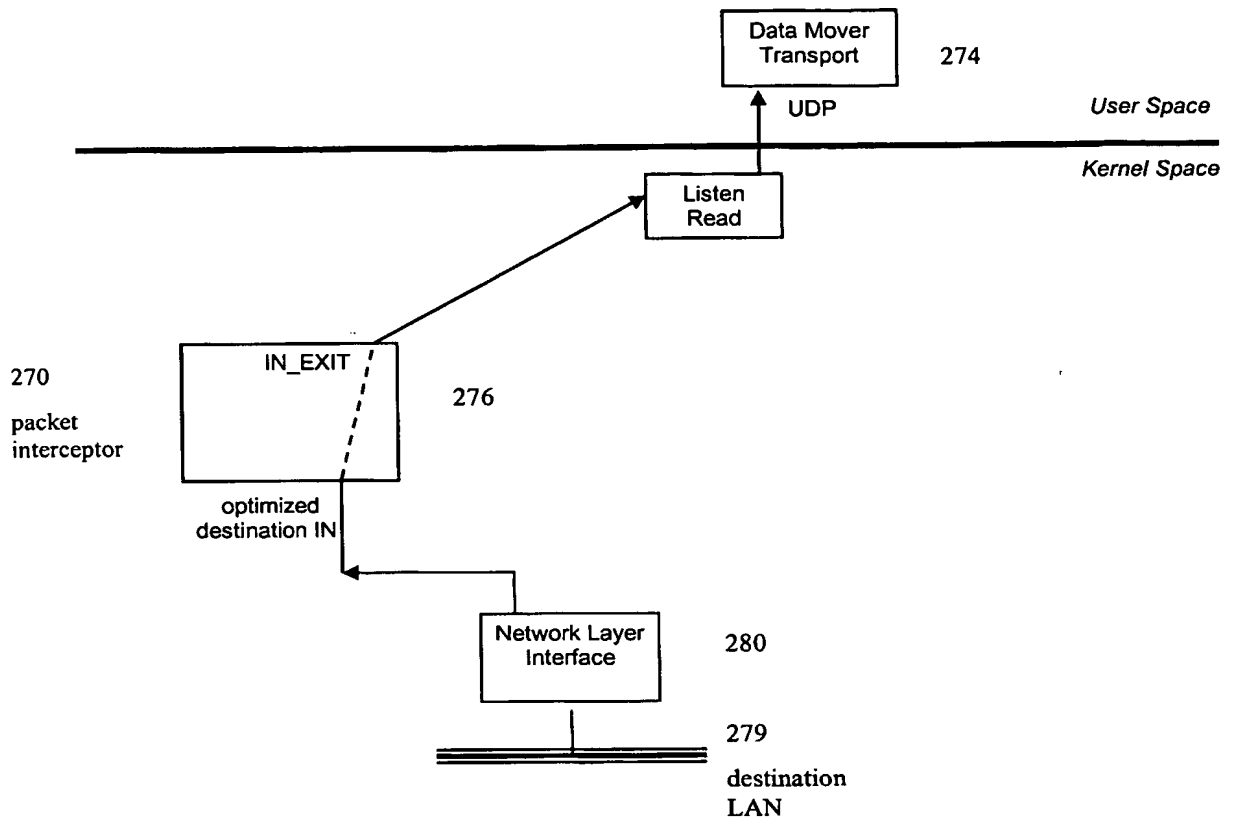


- ☐ Data mover drives UDP connection to peer TPO data mover
- ☐ Packets flow unchanged through OUT_EXIT and through network layer onto source LAN

Source TPO Packet Flow – Optimized Source-out

Figure 16.

Destination TPO packet flow

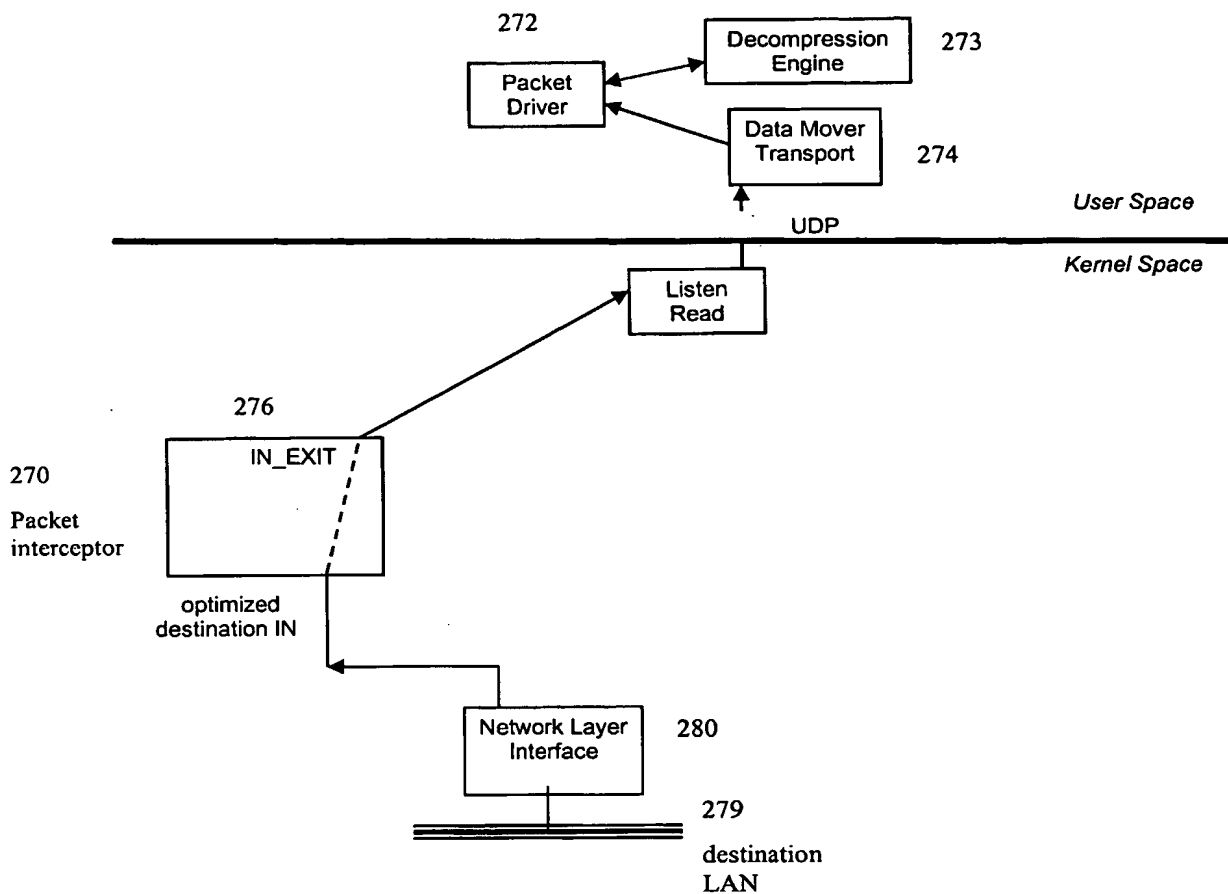


- ☐ Data mover drives UDP connection from peer TPO data mover
- ☐ Incoming TPO IP packets on destination LAN
- ☐ Packets flow through network layer into IN_EXIT
- ☐ Packets flow unchanged through IN_EXIT into data mover

Destination TPO Packet Flow – Optimized Destination-in

Figure 17.

Destination TPO packet flow

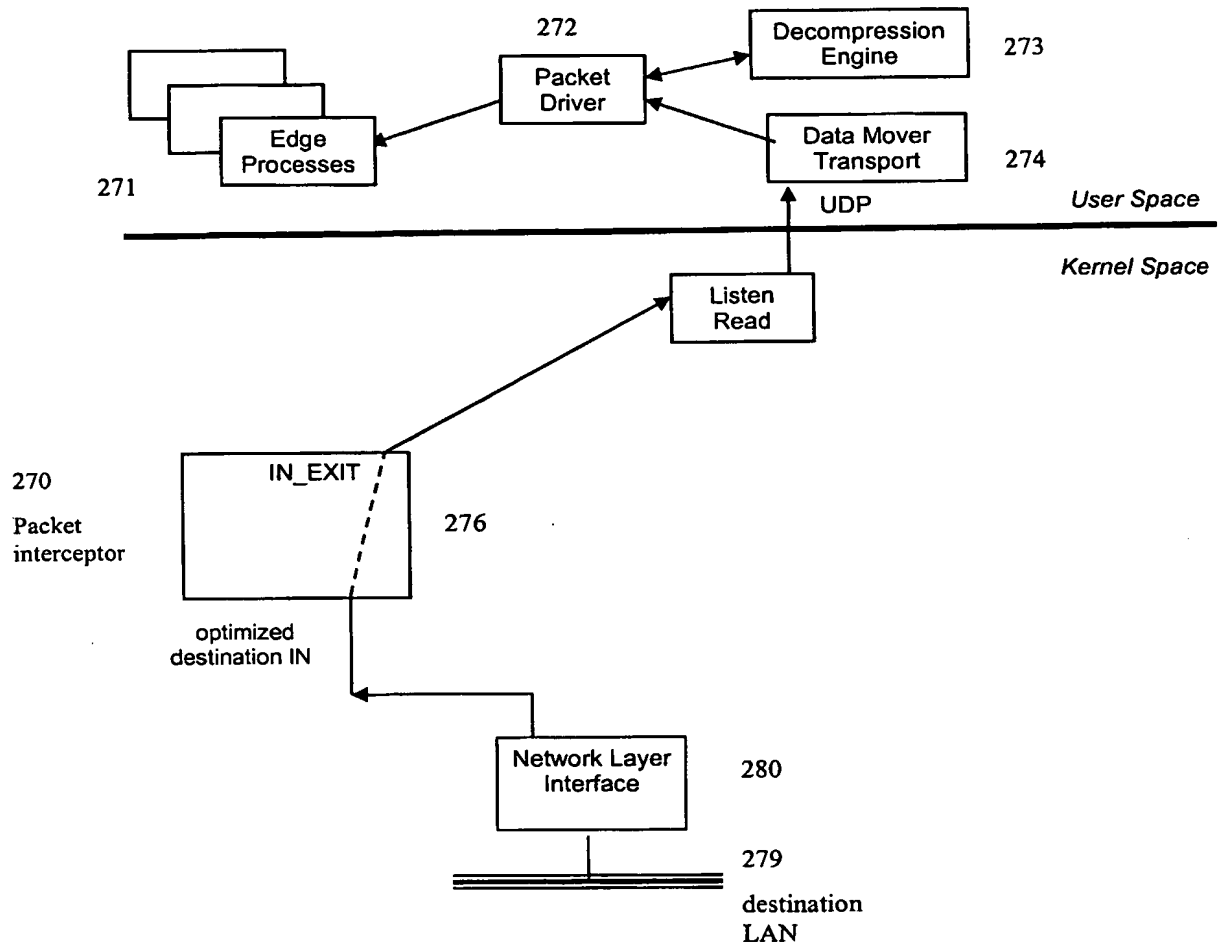


- ☐ Large compressed aggregated packets are passed to packet driver
- ☐ Large compressed aggregated packets are passed to decompression engine

Destination TPO Packet Flow – Packet Driver Decompression

Figure 18.

Destination TPO packet flow

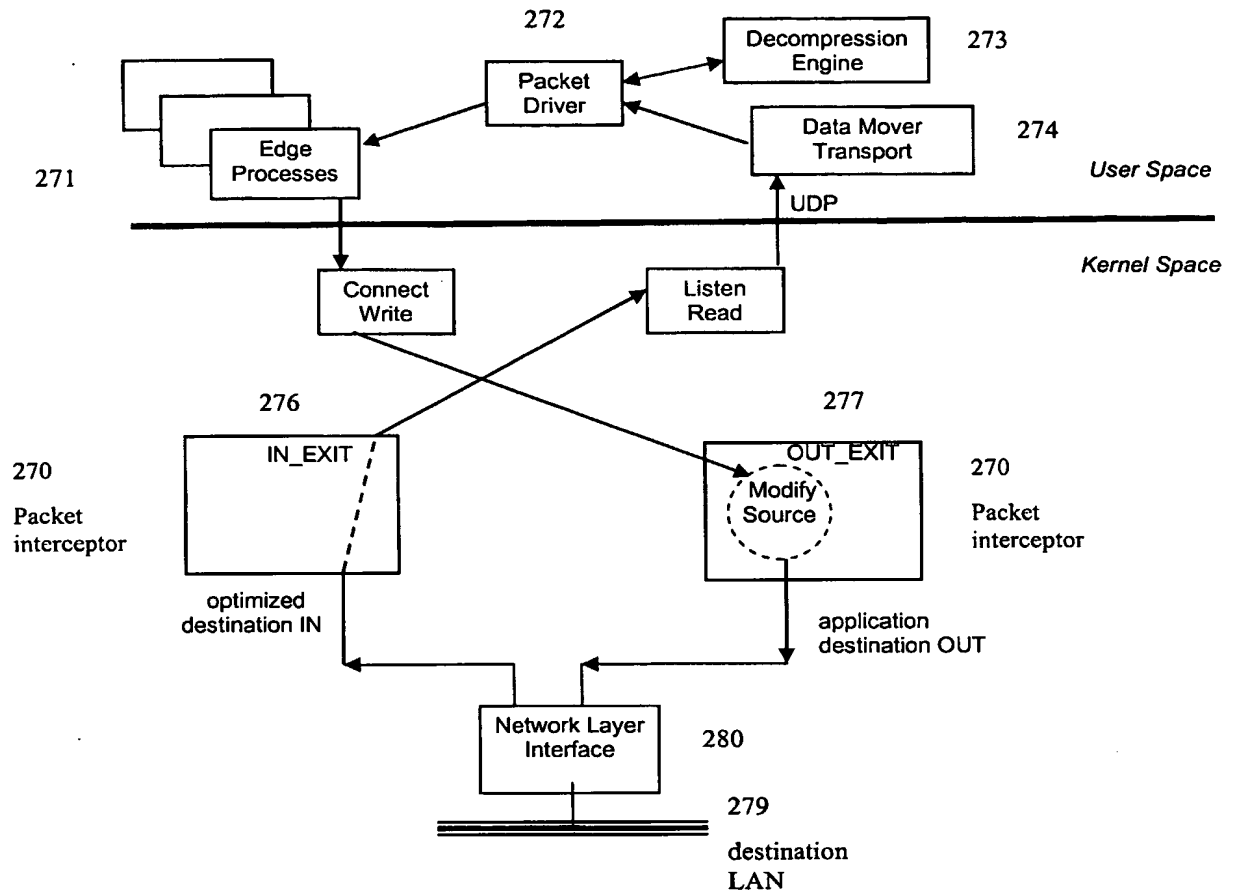


☐ Packets are disaggregated to destination edge processors

Destination TPO Packet Flow – Disaggregation

Figure 19.

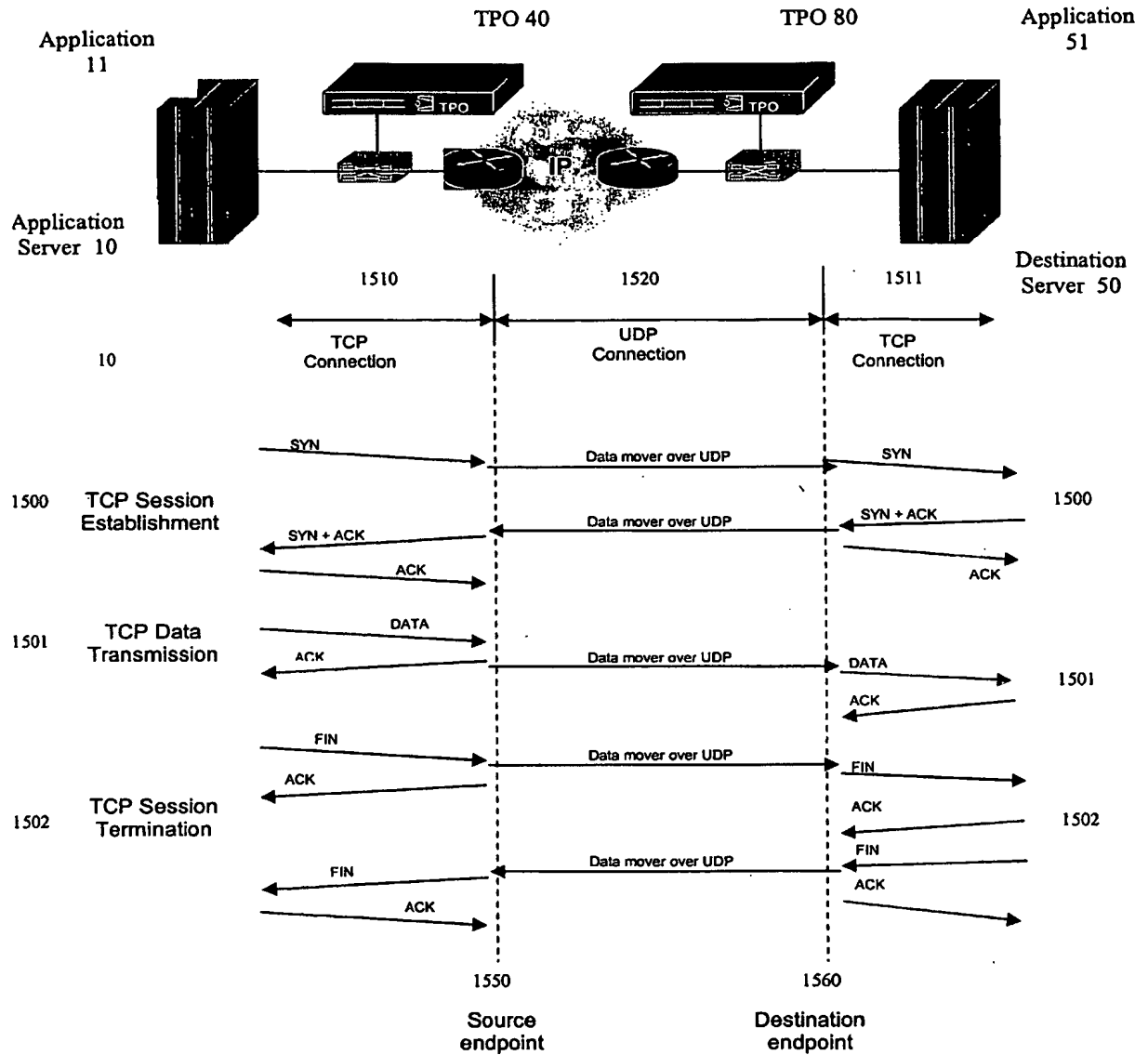
Destination TPO Packet Flow



- ☐ Packets flow into OUT_EXIT
- ☐ Source IP address and port is changed to originating server IP address and port
- ☐ Packets flow through the network layer onto the destination LAN

Destination TPO Packet Flow – Application Destination-out Packet Interceptor

Figure 20.



TCP/IP connection terminology

SYN – synchronize sequence numbers (connect)

ACK – acknowledgement

FIN – finished sending data (disconnect)

TPO TCP Connection Flow

Figure 21.